DECISION REPORT
Application #9104 - Kan-Alta Golf Management Ltd.

Construction of 18-Hole Golf Course Facility Evan Thomas Creek Area - Kananaskis Country

August 1992

ALBERTA
NRCB
NATURAL RESOURCES
CONSERVATION BOARD

92-07912/

CONSTRUCTION OF 18-HOLE GOLF COURSE FACILITY EVAN THOMAS CREEK AREA - KANANASKIS COUNTRY

NRCB Application 9104

August 1992

Published by:

Natural Resources Conservation Board
10th Floor, 640 Fifth Avenue S.W.
Calgary, Alberta
T2P 3G4

Telephone: (403) 297-8303

Facsimile: (403) 297-5270

TABLE OF CONTENTS

Page

1.0 INTRODUCTION . . . . - 1 -
  1.1 Background . . . . - 1 -
  1.2 Natural Resources Conservation Board Jurisdiction . . . . - 4 -
  1.3 Natural Resources Conservation Board Review Process . . . . - 4 -
    1.3.1 Receipt and Review of the Application . . . . - 4 -
    1.3.2 Prehearing Meetings . . . . - 4 -
    1.3.3 The Hearing . . . . - 5 -
  1.4 The Role of Alberta Environment . . . . - 9 -
  1.5 The Role of the Federal Government . . . . - 9 -

2.0 THE APPLICATION . . . . - 11 -
  2.1 Site Selection . . . . - 11 -
  2.2 Project Layout . . . . - 11 -
  2.3 Project Facilities . . . . - 12 -
  2.4 Project Utilities . . . . - 12 -
  2.5 Project Schedule . . . . - 12 -

3.0 POSITIONS OF THE INTERVENERS . . . . - 15 -
  3.1 Sarcee Fish and Game Association . . . . - 15 -
  3.2 Trout Unlimited . . . . - 15 -
  3.3 Dr. P. Paquet . . . . - 15 -
  3.4 Stoney Tribe . . . . - 16 -
  3.5 Federation of Alberta Naturalists . . . . - 17 -
  3.6 Mr. L. Boyd . . . . - 17 -
  3.7 Dr. H. Miller . . . . - 18 -
  3.8 Mr. W. Hermiston . . . . - 18 -
  3.9 Mr. M. Faubert . . . . - 18 -

4.0 PRELIMINARY JURISDICTIONAL ISSUES . . . . - 19 -

5.0 BASIS OF DECISION . . . . - 21 -

6.0 JUSTIFICATION FOR THE PROPOSED PROJECT . . . . - 23 -
  6.1 Views of the Participants . . . . - 23 -
  6.2 Views of the Board . . . . - 23 -

7.0 PROPOSED PROJECT LOCATION . . . . - 25 -
  7.1 Views of the Participants . . . . - 25 -
    7.1.1 Applicant . . . . - 25 -
    7.1.2 Sarcee Fish and Game Association . . . . - 25 -
    7.1.3 Federation of Alberta Naturalists . . . . - 25 -

7.1.4 Trout Unlimited . . . . - 26 -
7.2 Views of the Board . . . . - 26 -

8.0 ABILITY OF APPLICANT TO IMPLEMENT THE PROPOSED PROJECT - 27 -
8.1 Compliance With Regional Land Use Plans . . . . - 27 -
8.1.1 Views of the Participants . . . . - 27 -
8.1.2 Views of the Board . . . . - 28 -
8.2 Proposed Financing, Design, Construction and Operational Plans . . . . . - 28 -
8.2.1 Views of the Participants . . . . - 28 -
8.2.2 Views of the Board . . . . - 28 -

9.0 EFFECTS OF THE PROPOSED PROJECT ON THE ENVIRONMENT . . - 31 -
9.1 Effects on Water Quantity . . . . - 31 -
9.1.1 Effects of Irrigation Withdrawals on Evan Thomas Creek Flows . . . . - 31 -
9.1.2 Effects of Domestic Consumption on Groundwater . . . . - 32 -
9.2 Effects on Water Quality . . . . - 32 -
9.3 Other Water Related Issues . . . . - 34 -
9.3.1 Maintenance of a Buffer Along Evan Thomas Creek and Creek Crossings . . . . - 34 -
9.3.2 Disposal of Sewage Effluent . . . . - 35 -
9.3.3 Implications of Channel Migration and Debris Flow . . . . - 35 -
9.4 Effects on Aquatic Life . . . . - 35 -
9.4.1 Size of the Fisheries Resource . . . . - 35 -
9.4.2 Fish Mortality due to Sedimentation . . . . - 36 -
9.4.3 Fish Mortality Due to Degradation of Water Quality . . . . - 37 -
9.4.4 Alteration of Existing Habitat Conditions . . . . - 37 -
9.4.4.1 Flow Reductions . . . . - 37 -
9.4.4.2 Channel and Bank Alterations . . . . - 38 -
9.4.4.3 Loss of Riparian Habitat . . . . - 38 -
9.4.4.4 Habitat Enhancement Opportunities . . . . - 39 -
9.5 Contamination of On-Site Soils . . . . - 39 -
9.6 Vegetation . . . . - 39 -
9.6.1 Clearing of Vegetation Communities . . . . - 39 -
9.6.2 Rare Plants . . . . - 40 -
9.6.3 Weed Introductions . . . . - 40 -
9.6.4 Contamination from Spills . . . . - 40 -
9.6.5 Views of the Board . . . . - 40 -
9.7 Wildlife . . . . - 41 -
9.7.1 Adequacy of Baseline Data . . . . - 41 -
9.7.2 Effects on Wildlife . . . . - 42 -
9.7.2.1 Wildlife Mortality . . . . - 42 -
9.7.2.2 Habitat Alteration . . . . - 44 -
9.7.2.3 Habitat Alienation and Habituation . . . . - 45 -

9.7.2.4 Numbers of Animals that Might be Affected . . . . . . - 47 -
9.7.3 Habitat Enhancement . . . . - 49 -
9.7.3.1 Encroachment on the Existing Habitat Enhancement Area . . . . - 49 -
9.7.3.2 Habitat Enhancement for the Entire Project . . . . . . - 50 -
9.7.4 Wildlife Movement Corridors . . . . - 52 -
9.7.5 Critical Wildlife Zone 2 . . . . - 54 -
9.7.6 Cumulative Effects . . . . - 56 -
9.7.7 Summary of Views of the Board Regarding Wildlife . . . . - 58 -

10.0 SOCIO-ECONOMIC EFFECTS OF THE PROPOSED PROJECT . . . . . - 61 -
10.1 Visual Resources . . . . - 61 -
10.2 Recreational Use of the Area . . . . - 61 -
10.2.1 Hunting and Fishing . . . . - 61 -
10.2.2 Hiking, Skiing, Horseback Riding and Other Recreational Uses- 61 -
10.3 Historical and Archaeological Resources . . . . - 63 -
10.4 Economic Effects . . . . - 64 -
10.5 Need for Municipal and Other Services . . . . - 65 -
10.5.1 Sewage . . . . - 65 -
10.5.2 Housing . . . . - 66 -
10.6 Effects on the Stoney Tribe . . . . - 66 -
10.6.1 Views of the Participants . . . . - 66 -
10.6.2 Views of the Board . . . . - 68 -
10.7 Overall Conclusions of the Board Regarding Socio-Economic Effects of the Proposed Project . . . . - 69 -

11.0 OVERALL BOARD CONCLUSIONS RESPECTING THE PUBLIC INTEREST OF THE PROPOSED PROJECT . . . . - 71 -

12.0 DECISION . . . . - 75 -

APPENDIX A - Prehearing Meeting Decision Letters . . . . - A1 -

APPENDIX B - Summary of Board Recommendations . . . . - B1 -

APPENDIX C - Form of Approval . . . . - C1 -

1.0 INTRODUCTION

1.1 Background

Kan-Alta Golf Management Ltd. (Kan-Alta) currently leases and operates the existing Kananaskis Country Golf Course under the terms of a contract with the Province of Alberta. In an application to the Natural Resources Conservation Board (NRCB), Kan-Alta, in association with Paragon Properties Ltd. (Paragon) and William Turnbull, is proposing to develop an additional 18-hole golf course with associated clubhouse and maintenance facilities (the project) in Kananaskis Country on land to be leased from the Crown. The development would be located on the east side of Highway 40 adjacent to Evan Thomas Creek and approximately one kilometre (km) south of the existing Kananaskis Country Golf Course (see Figures 1 and 2).

Preliminary disclosure statements to develop a second golf course complex in Kananaskis Country were initially filed independently by both Kan-Alta and Paragon with the Government of Alberta in July 1988. Because of the similarities of the proposals, the two proponents agreed to form a joint venture to pursue the development of a golf course in the Evan Thomas Creek area. Under the current joint venture agreement, Kan-Alta has assumed a 60 percent share in the project, with the remaining 40 percent being shared equally by Paragon and William Turnbull.

In March 1990, the Minister of Forestry, Lands and Wildlife authorized the Kan-Alta proposal to proceed subject to:

1. The review of a detailed development plan and environmental study by the Kananaskis Country Interdepartmental Committee (KCIC);

2. KCIC and the Kananaskis Country Citizens Advisory Committee (KCAC) holding public meetings in Calgary to receive briefs and submissions; and

3. KCIC making final recommendations to the Department of Forestry, Lands and Wildlife on whether a lease should be issued and under what conditions.

In response to these conditions, Kan-Alta prepared a development plan and environmental study for the project, and distributed the document in November 1990 to identified interest groups within the area, the media, the Calgary Public Library and Kananaskis Country offices in Calgary. A formal presentation of the submission was made to KCIC on November 27, 1990. In January 1991, KCIC and KCAC advertised and held a public information meeting at Canada Olympic Park to solicit public comment on the project.

On May 6, 1991, Kan-Alta was requested to submit an Environmental Impact Assessment (EIA) for government and public review. Terms of Reference for the EIA were finalized by Alberta Environment (with public input) and provided to Kan-Alta on September 12, 1991. Based on these Terms of Reference, Kan-Alta prepared an EIA for Alberta Environment and for inclusion in the application to the NRCB.

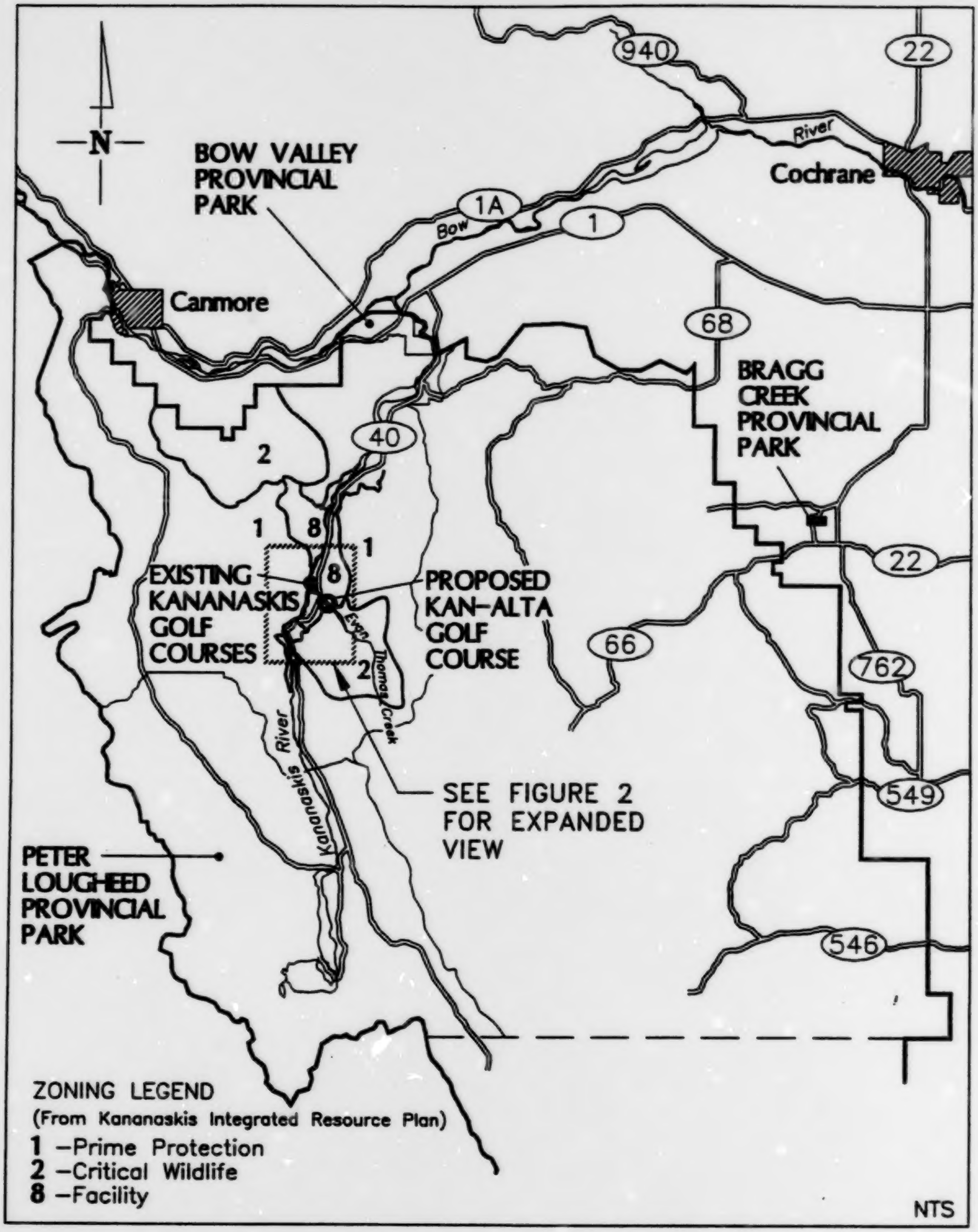
N
940
22
River
BOW VALLEY PROVINCIAL PARK
Cochrane
1A
Bow
1
Canmore
68
BRAGG CREEK PROVINCIAL PARK
40
2
1
8
1
8
EXISTING KANANASKIS GOLF COURSES
PROPOSED KAN-ALTA GOLF COURSE
Evan Thomas Creek
22
66
2
762
Kananaskis River
SEE FIGURE 2 FOR EXPANDED VIEW
549
PETER LOUGHEED PROVINCIAL PARK
546
ZONING LEGEND
(From Kananaskis Integrated Resource Plan)
1 –Prime Protection
2 –Critical Wildlife
8 –Facility
NTS

FIGURE 1 PROPOSED GOLF COURSE DEVELOPMENT LOCATION IN KANANASKIS COUNTRY

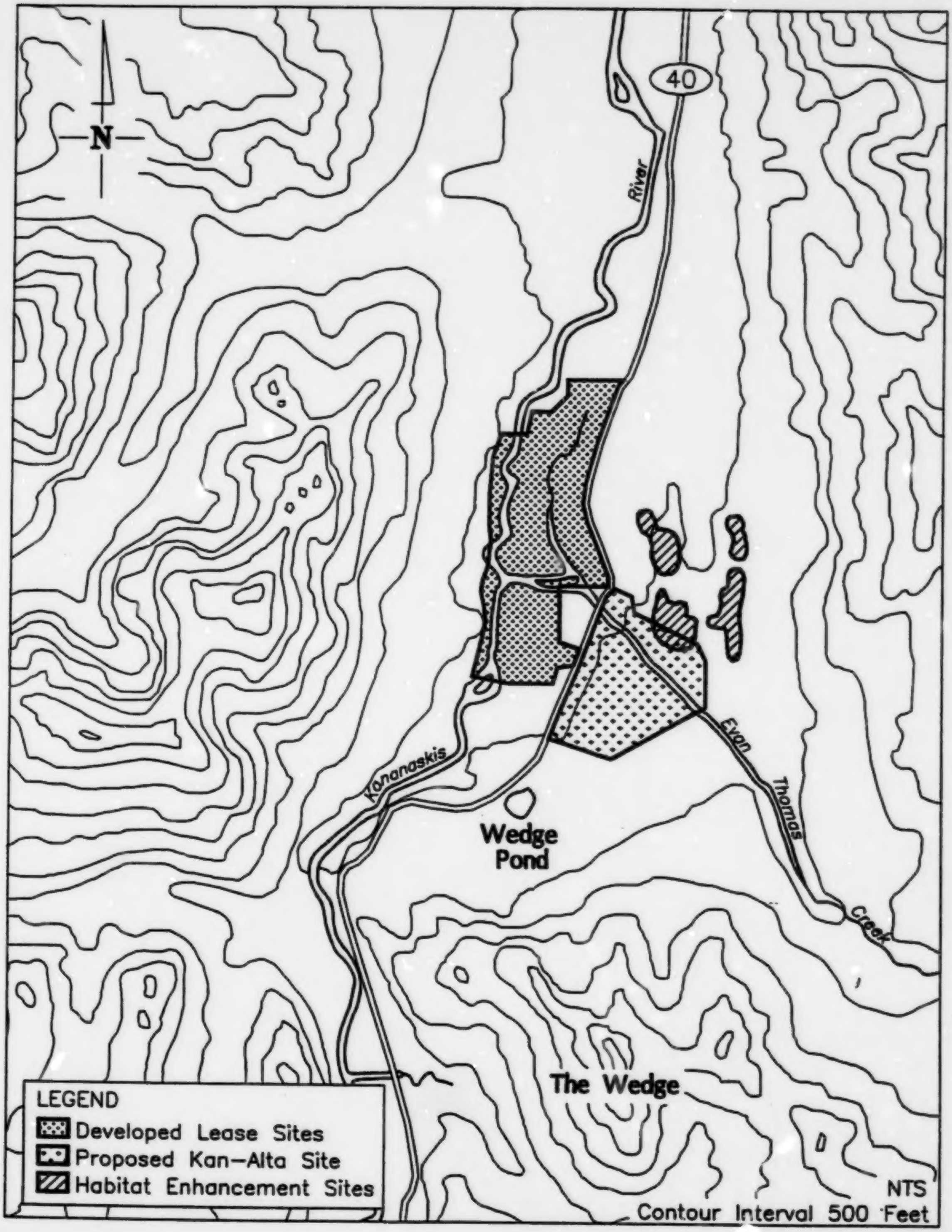
N
40
River
Kananaskis
Evan
Thomas
Creek
Wedge Pond
The Wedge
LEGEND
▨ Developed Lease Sites
▨ Proposed Kan–Alta Site
▨ Habitat Enhancement Sites
NTS
Contour Interval 500 Feet

FIGURE 2 THE WEDGE – EVAN THOMAS CREEK AREA

1.2 Natural Resources Conservation Board Jurisdiction

The Natural Resources Conservation Board Act (the Act) established a Board to "... provide for an impartial process to review projects that will or may affect the natural resources of Alberta in order to determine whether, in the Board's opinion, the projects are in the public interest, having regard to the social and economic effects of the projects and the effect of the projects on the environment".

The types of projects that are subject to review, as set out in the Act, include recreational or tourism projects for which an EIA has been ordered by the Minister of Environment. By letter dated May 6, 1991, Kan-Alta was directed to prepare an EIA for its proposed project, and as a result, it is a reviewable project and is subject to NRCB jurisdiction.

The Act prohibits the commencement of a reviewable project unless the NRCB, on application, has granted an approval, subject to authorization of Cabinet. The NRCB approval required for these projects is in addition to all other approvals, licences or permits required under any other act, regulation or by-law in force in the province.

The Board's mandate is to determine whether the proposed 18-hole golf course is in the public interest, and if so, to approve it. Once a decision report is issued, the Board does not have any ongoing regulatory function.

1.3 Natural Resources Conservation Board Review Process

1.3.1 Receipt and Review of the Application

Application 9104 (the application) was received from Kan-Alta on November 26, 1991. It requested approval to develop an 18-hole golf course, with associated facilities, access road, and utilities, adjacent to Evan Thomas Creek in Kananaskis Country. In accordance with NRCB regulations, the application included an EIA prepared under the Terms of Reference issued by Alberta Environment. A Supplementary Information Request was mailed to the applicant on February 6, 1992, and, on February 13, 1992, the Board issued a Preliminary Notice of Application. On March 24, 1992, Kan-Alta filed its response to the Request for Supplementary Information with the NRCB.

After review of this information by Board staff and after being advised by Alberta Environment that from its perspective the EIA was suitable for discussion at a public hearing. A Notice of Hearing was issued by the Board on April 7, 1992, and a hearing was scheduled for June 2, 1992.

1.3.2 Prehearing Meetings

A request for adjournment was received by the NRCB from the Alberta Wilderness Association (AWA) on April 13, 1992. A meeting was scheduled for April 27, 1992, to consider the adjournment request. In the interim, additional adjournment requests were received from The Federation of Alberta Naturalists (the Federation), the Bow Valley Naturalists, Trout Unlimited Canada and a number of Trout Unlimited Chapters and the Upper Bow Valley Fish and Game Association (Trout Unlimited), and the Alberta Fish and Game Association. Kan-Alta opposed the requested adjournment, and after hearing argument, the Board confirmed the hearing date of June 2, 1992, in its written decision dated April 28, 1992.

A second prehearing meeting was held on April 29, 1992, to consider a number of matters related to intervener funding. Three interveners participated in the meeting: the Federation, Trout Unlimited, and the Sarcee Fish and Game Association (Sarcee F and G Association). The latter two applied to the Board for an advance award of costs, while the Federation only asked for a determination that it was "directly affected". In its written decision of May 4,1992, the Board concluded that none of the interveners are or would be "directly affected" and therefore eligible for intervener funding. However, the Board indicated it was prepared to provide some funds to assist in bringing relevant information before the Board.

The written decisions for these meetings are attached as Appendix A.

1.3.3 The Hearing

The hearing opened in the Rafter Six Ranch Resort at Seebe, Alberta on June 2, 1992, with G.J. DeSorcy, P.Eng., G.A. Yarranton, PhD., C.H. Weir, P. Eng., and D.M. Derworiz, P.Eng. sitting. The hearing concluded on June 10, 1992, having convened on June 2, 3, 4, 5, and 10. The hearing participants are listed in Table 1.1.

TABLE 1.1

LIST OF PARTICIPANTS

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Kan-Alta Golf Management Ltd. (Kan-Alta)	
Mr. B. O'Ferrall Mr. C. Steele	Mr. N. Kimball Mr. B. Bygrave Mr. J. Rust, P.Eng. (Lamb McManus Associates Ltd.) Mr. T. Gowing, P.Eng. (Urban Systems Ltd.) Mr. D. Reid (HBT AGRA Limited) Mr. G. Beckstead, P.Eng. (HBT AGRA Limited) Ms. J. Smith (Concord Environmental Corporation) Dr. P. McCart (Aquatic Environments Limited) Mr. J. O'Connor
Sarcee Fish and Game Association (Sarcee F and G Association)	
Mr. R. Everett	Mr. R. Everett Mr. D. Bogdonov Ms. T. Clapp

TABLE 1.1

LIST OF PARTICIPANTS

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Trout Unlimited Canada and a number of Trout Unlimited Chapters and the Upper Bow Valley Fish and Game Association (Trout Unlimited)	
Mr. D. Pike	Mr. D. Pike Mr. G. Szabo Mr. K. Brewin (Trutta Environments and Management) Mr. H. Hamilton (Environmental Management Association)
Federation of Alberta Naturalists (Federation)	
Ms. I. Ektvedt Ms. M. Posey	Ms. I. Ektvedt Ms. M. Posey Mr. D. Stiles
Dr. P. Paquet (self)	Dr. P. Paquet (John/Paul & Associates)
Stoney Tribe	
Mr. D. Rae Ms. J. McLachlan	Mr. P. Wesley Mr. L. Wesley Mr B. Ear, Senior Mr. K. Tully Mr. I. Getty
Mr. L. Boyd (self)	Mr. L. Boyd
Dr. H. Miller (self)	Dr. H. Miller
Mr. M. Faubert (self)	Mr. M. Faubert
Mr. W. Hermiston (self)	Mr. W. Hermiston

TABLE 1.1

LIST OF PARTICIPANTS

Principals and Representatives (Abbreviations Used in Report)	Witnesses
Government of Canada Department of Fisheries & Oceans (DFO)	
Mr. G. Hopky Mr. R. Garrod	
Government of Alberta Alberta Environment	
Mr. R. Stone	
Natural Resources Conservation Board Staff	
Mr. W. Kennedy Mr. P. Cleary Dr. R. Powell Dr. A. van Roodselaar, P.Eng. Mr. J. McKee (NRCB staff)	
Ms. K. Hale Mr. R. Eccles Mr. I. Jones, P.Geol. Mr. D. Westworth (Consultants to the NRCB)	

1.4 The Role of Alberta Environment

Alberta Environment made a statement at the outset of the hearing respecting its role in the administration of the EIA process. This process covers screening of projects to determine the need for EIA reports, determining the appropriate scope of an EIA, ensuring public consultation throughout the EIA process, coordinating interdepartmental reviews of the EIA documents to ensure consistency with the Terms of Reference established for the review, and providing advice as to whether the EIA is suitable for discussion at a public hearing.

All of these functions were carried out with respect to the application by Kan-Alta. On April 2, 1992, Alberta Environment advised the NRCB that the EIA was suitable for consideration at a public hearing.

Alberta Environment participated in the hearing by asking questions of the applicant and the interveners to assist the NRCB review of the EIA report and to address the environmental implications of the proposed development.

It also has regulatory responsibilities respecting the proposed development. Any consumptive use of water for the proposed golf course would require approval from Alberta Environment under the Alberta Water Resources Act. Additionally, an approval pursuant to the Clean Water Act would be required to link this facility to the regional sewer system.

Furthermore, Alberta Environment advised that the application of pesticides, herbicides and fungicides in Alberta requires authorization pursuant to the Agricultural Chemicals Act administered by Alberta Environment.

Alberta Environment confirmed that it will not consider any approvals pursuant to its regulatory requirements until the NRCB has completed its review of the proposal and made its decision.

Finally, Alberta Environment advised that, throughout the EIA process, it had provided information to Environment Canada on details and issues related to the proposed golf course development so that the federal government was aware of the proposal.

1.5 The Role of the Federal Government

The Federal Department of Fisheries and Oceans (DFO) participated in the hearing by asking questions of the applicant. It advised the Board, at the outset of the hearing, of its role respecting the application.

DFO advised that it is responsible for the management and protection of fish and marine mammals and their habitats. These responsibilities are achieved using the powers of the Fisheries Act which contain provisions, among other things, to prevent the harmful disruption, alteration or destruction of fish habitat and to prevent the deposition of deleterious substances into the waterways related to the proposed golf project.

DFO advised also that it is not applying the Federal Environment Assessment and Review Process (EARP) Guidelines Order to the applicant's proposal, following the

January 23, 1992, Supreme Court of Canada decision in Friends of the Oldman River Society v. Canada (Minister of Transport) et al. This decision led DFO to conclude it can no longer be an initiating department under the EARP Guidelines Order pursuant to its fish habitat management decisions. However, DFO said it is prepared to work with the applicant and other federal and provincial departments to optimize fish habitat decisions.

DFO indicated that throughout the EIA process, it had consulted with Environment Canada about water issues and had received technical information from Alberta Forestry, Lands & Wildlife about fish and fish habitat in the potential impact area.

2.0 THE APPLICATION

In November, 1991, Kan-Alta applied to the Board for approval to proceed with a golf course development in the Evan Thomas Creek area of Kananaskis Country. The application included a Development Plan and EIA, submitted in accordance with the Land Surface Conservation and Reclamation Act. In response to the Board's Request for Supplemental Information pertaining to the project, Kan-Alta filed additional information with the Board on March 24, 1992 and May 6, 1992.

2.1 Site Selection

Four alternative locations for the proposed golf course development were considered by Kan-Alta. These were the Ribbon Creek, the Marmot Creek, the Wedge Pond and the Evan Thomas Creek sites. In selecting suitable alternative sites, Kan-Alta considered only lands with predominantly Zone 8-Facility designation, in accordance with the Kananaskis Country Sub-Regional Integrated Resource Plan. Criteria used to select the preferred site from the alternatives included:

- convenience of access to major highways;
- travel distance from tourist facilities such as hotels and campgrounds;
- access to adequate water supply;
- access to utilities and sewage disposal; and
- a minimum land base of 120 hectares (ha) of undulating terrain with visual appeal, with a maximum number of hours of sunshine.

No environmental criteria were used to evaluate the suitability of the alternative sites, and Kan-Alta explained that the preferred site had been discussed in principle with KCIC and KCAC prior to Kan-Alta retaining consultants to prepare an environmental study. Therefore, no detailed comparisons of site alternatives were provided.

2.2 Project Layout

Kan-Alta advised that the proposed golf course development is designed to be an 18-hole layout, with associated clubhouse, driving range, maintenance facilities, access road and utilities. The proposed development would fall entirely on the east side of Highway 40, approximately one km south of the existing Kananaskis Country Golf Course. The total area within the proposed development lease is approximately 165 ha, although only 83 ha would actually be cleared to accommodate facilities.

The clubhouse and associated parking lot, main access road, maintenance facilities and driving range would be situated on the north side of Evan Thomas Creek. Three of the 18 holes (i.e., holes 1, 10, and 18) would cross the active channel of Evan Thomas Creek. All of the remaining holes would be located on the historic floodplain or adjacent rolling terrain south of the creek channel. Four ponds and approximately 55 sand bunkers are planned as hazards for the course.

Both sand and topsoil would be imported from off-site locations for construction of the course. Of the estimated 55,000 cubic metres (m^3) of topsoil required, approximately two-thirds would be imported from the Calgary area, with the remainder to be available on-site. White silica sand, comparable to that used on the existing Kananaskis Golf Course, would be imported for the bunkers.

2.3 Project Facilities

Kan-Alta advised that the proposed clubhouse and maintenance building would be the only structures on-site. The clubhouse would provide 2,070 square metres (m^2) of floor area on three levels, and would house a pro shop, cart storage area, snack bar, dining room (80 person capacity), lounge (120 person capacity), and a private meeting space for 40 people, in addition to a locker room (approximately 160 lockers). The clubhouse would be finished in a combination of wood and stone in keeping with the architectural theme developed for Kananaskis Country. Parking for 170 public vehicles, 40 staff vehicles and buses would be developed immediately north of the clubhouse. The one story maintenance building proposed for the project would provide approximately 650 m^2 of floorspace, with an associated 1,800 m^2 service yard.

The main access road to the clubhouse would exit Highway 40 approximately 300 metres (m) north of the highway bridge across Evan Thomas Creek, and would follow the existing trail in that area. The road would be a paved, 12 metre-wide two lane roadway within a 20 metre-wide cleared easement. A four metre-wide graveled maintenance road would also be looped through the lease area, and would require two bridge structures across the creek. Three additional smaller bridges across the creek would be constructed to accommodate golf traffic.

2.4 Project Utilities

Kan-Alta advised that power and telephone service would be provided via underground connections from the existing TransAlta and AGT facilities in the Kananaskis Country utility corridor west of Highway 40. Propane-fired or electrical heating would be used in the on-site buildings.

It is proposed that domestic water would be supplied from on-site wells drilled near the clubhouse. Irrigation water would be drawn from Evan Thomas Creek, via a combination of open ditches and buried pipelines, and would be stored in four ponds developed on-site as water hazards. Groundwater supplied from wells would serve as a back-up source for irrigation in the event of low flows in Evan Thomas Creek.

The sewage system proposed for the project would be connected to the existing sanitary sewer and the Evan Thomas Sewage Treatment Plant. This connection would be accomplished using a gravity main that would follow new roadways and existing cleared corridors between the on-site buildings and the utility corridor located on the existing golf course. Solid wastes would be collected by the Kananaskis Country Improvement District No. 5 and transported to the existing collection bin south of the Mount Kidd Recreational Vehicle Park.

2.5 Project Schedule

Under Kan-Alta's proposed project schedule, clearing for the access road, fairways, and maintenance area would commence in September 1992. Access road construction and utility installations would be completed during the summer and early fall of 1993, while fairway grading and construction would commence in spring 1993, and continue through to summer 1994. The maintenance facility would be completed during the summer of 1994. Construction of the clubhouse would require a full construction year (i.e., June, 1994 to July, 1995). The scheduled opening for the course would be summer 1996.

3.0 POSITIONS OF THE INTERVENERS

3.1 Sarcee Fish and Game Association

The Sarcee F and G Association is a Calgary-based hunting and fishing group, with approximately 450 members. The Association is involved in habitat enhancement projects for both fish and wildlife, generally within a 200 to 300 km radius of Calgary. The Sarcee F and G Association has participated in elk monitoring within the Bow Valley corridor and Kananaskis Valley, and members of the Association have been involved with the public input process for developments in the Bow Valley Corridor and Kananaskis Country.

The Sarcee F and G Association emphasized that baseline information provided by Kan-Alta was not sufficient to understand the biophysical impacts of the proposed project, or to determine the net cost or benefit of the proposed project in social and economic terms. It also emphasized the importance of the Evan Thomas Creek area for a variety of wildlife because of its gentle topographic characteristics, habitat diversity, and probable use as a movement corridor.

The Sarcee F and G Association recommended that the Board reserve its decision on the project "...until the critical deficiencies have been adequately addressed and detailed monitoring, evaluation and environmental management options have been prepared for the non-critical deficiencies" and "...in light of the impact which the critical deficiencies will have on the determination of net benefits, including opportunity costs, of this proposal."

3.2 Trout Unlimited

Trout Unlimited Canada is a national organization with more than 3,000 members across the country. It is involved in stream and lake enhancement projects to maintain and enhance angling opportunities and fisheries stocks. Trout Unlimited representatives at the hearing were participating on behalf of the Bow River, Jumping Pound and Upper Bow Valley chapters of Trout Unlimited (combined membership of approximately 1,200), as well as the Upper Bow Valley Fish and Game Association (125 members).

Trout Unlimited emphasized that baseline information provided by Kan-Alta pertaining to the existing fisheries resource and seasonal flows within Evan Thomas Creek was insufficient to permit project-related impacts on the creek to be adequately assessed, and that proposed protection measures would not ensure the well-being of the creek.

Trout Unlimited stated that "we could support a decision in favor of the proponent, subject to conditions being applied to ensure our concerns were adequately addressed."

3.3 Dr. P. Paquet

Dr. Paquet is a carnivore researcher currently active in an on-going wolf research study in the Bow Valley corridor. Dr. Paquet advised that he was attending the hearing as a neutral intervener, and wished to serve as a wildlife information source for other hearing participants.

Because of the large seasonal ranges and movements of the wolves, Dr. Paquet indicated that the study area was, of necessity, expanded to include Kananaskis Country.

Extensive ground tracking of wolves, as well as their major prey species, has been undertaken during the study. Consequently, the study has generated additional information on ungulates as well as wolves.

Preliminary telemetry data from Dr. Paquet's study demonstrated the extensive use of the Kananaskis Valley bottom (including the Evan Thomas Creek area) by a collared wolf from June 1991 to April 1992. Scat analysis indicated a heavy dependency by wolves on elk as a prey item in the region.

Dr. Paquet took no position respecting the application but presented his opinion on several wildlife-related issues surrounding the proposed golf course development. These included:

- observations of very low productivity in elk in the Evan Thomas Creek area, relative to Banff herds;
- based on winter track observations of ungulate and carnivore use of the existing golf courses, Dr. Paquet did not feel that the operation of the proposed golf course, in combination with other existing developments, would present an obstruction to winter wildlife movements;
- Dr. Paquet considered disturbance from construction would have a significant effect on animal distributions, and suggested that an August/September construction window would be least disruptive to wildlife;
- Dr. Paquet recommended that any wildlife-related mitigation measures implemented for the proposed project should be monitored as construction proceeds to identify shortcomings and necessary modifications;
- if the golf course does permanently displace ungulates from the area, decreases in ungulate populations for the region would occur. He further suggested that even temporary displacement during critical periods could also result in animal losses;
- Dr. Paquet estimates that 50 elk and 10 moose use the Evan Thomas Creek area;
- in a wide enough valley, Dr. Paquet feels that ungulates will accommodate developments in their movement corridors by displacing to secondary corridors, if they are available;
- he was of the opinion that spreading out the golf course with greater distances between fairways (as proposed) would maintain better community diversity for wildlife.

3.4 Stoney Tribe

The Stoney Tribe consists of three bands: the Goodstoney Band, the Bearspaw Band and the Chiniki Band. The Stoney Reserves are situated in several different locations, the two closest locations to the proposed development being Morley and Eden Valley.

During its presentation, the Stoney Tribe emphasized the historic and cultural significance of the Evan Thomas Creek area to the Stoney people, stating that the area has been used for hunting, fishing, trapping, cultural ceremonies and education for many generations. The Stoney representatives were disappointed that Kan-Alta had not consulted the Tribe on the proposed development, and expressed concerns that the project would further restrict their hunting and trapping activities in the valley. They also felt that the historic overview completed by Kan-Alta had overlooked the Stoney people, and their involvement with the Kananaskis Valley. The low employment rate on the reserve (20 percent) and the availability of Stoney workers for the project was reviewed by the Tribe. Their strong desire to share the Stoney culture with non-Stoney and non-aboriginal people through such projects as the Kan-Alta golf development was also expressed. The Tribe participated in the hearings not as supporters of the project but instead "seeking a positive benefit in mitigation of the losses that the Stoneys will suffer, if the project is approved".

3.5 Federation of Alberta Naturalists

The Federation indicated that it was participating in the NRCB process on behalf of numerous members whose recreational use of the Evan Thomas Creek area would be affected by the proposed project. It stated its opposition to a golf course development on the habitat enhancement site north of Evan Thomas Creek, stating: "This particular enhancement area, selected to be on the opposite side of the road from major developments, and a part of a long sweep of undeveloped land suited both to the rather boundaryless needs of wildlife and to wildland recreation, has succeeded so well at its primary purpose as to have attracted a newly split-off pack of wolves, a species long extirpated from the area."

The Federation opposed the development of a golf course on the east side of the highway, indicating that although zoned for development, such zoning was generally established without the benefit of good baseline data on wildlife in the area, and that Zone 8 lands do not have to be fully developed for intensive recreational use.

The Federation's position was that the project should "be refused as inappropriately situated" or that project approval be deferred for at least one year "to allow for the collection of baseline data against which mitigation measures may be assessed". Should the project be approved, the Federation stated that "it should be so only under the conditions of strict monitoring of changes in the behavior of wildlife maintained throughout the life of the project".

3.6 Mr. L. Boyd

Mr. Boyd, a rancher from Longview, expressed concern that the political dimension has dominated Kananskis Country, and that "politics has eclipsed all other considerations, even the environment". He summarized his position by stating that "Kananaskis Country, if maintained in its natural state as possible, is attractive to more individuals and groups with a greater variety of interests from all over the world than any further, large scale intrusion into the environment of Kananaskis Country."

3.7 Dr. H. Miller

Dr. Miller indicated his support for Kan-Alta's proposal and tourism in Kananaskis Country. He stated that he built the first cottage at Kananaskis, and considered himself "well aware" of the Kananaskis area.

He further emphasized the need for more tourist facilities in Canada to increase the foreign tourist trade. He felt that more facilities (such as Kan-Alta's proposal) were required in Kananaskis Country to make the area a first class tourist destination.

3.8 Mr. W. Hermiston

Mr. Hermiston operates a retail outlet at the Lodge at Kananaskis, and is supportive of the Kan-Alta proposal. Mr. Hermiston discussed the high degree of appreciation expressed by his customers for the existing Kananaskis Golf Course, and the need for more golf capacity in the area. He expressed the opinion that the Kan-Alta project would be a healthy recreational addition to the area which "would work with harmony with everything in the valley".

3.9 Mr. M. Faubert

Mr. Faubert, General Manager of Ski Kananaskis Inc., is supportive of the Kan-Alta proposal. Mr. Faubert stated that the development could proceed without compromising existing wildlife, fish, or recreational values in the area, and stressed the importance of the tourist industry to the overall economy of Alberta. He stressed the need for broadening the tax base in the area, through the approval of additional responsible recreational developments, such as the Kan-Alta proposal. He encouraged all stakeholders, including operators, government, residents, users, and special interest groups to work together in developing a long-term plan and strategy for Kananaskis Country.

4.0 PRELIMINARY JURISDICTIONAL ISSUES

During the hearing, counsel for the applicant raised a number of issues related to the jurisdiction of the NRCB. The Board believes it should address two of these issues prior to considering the proposed project.

The applicant suggested that the NRCB has limited jurisdiction to deal with issues which would be dealt with by other authorities considering additional approvals required for the project. The examples given for the applicant included:

- in reference to the Water Resources Act: "Conditions like the construction of buffers and appropriate development setbacks from Evan Thomas Creek. It seems to me that it's premature for this Board to get into those kinds of conditions at this point because of the potential to be in conflict or constrain in some way the Director of Water Resources";
- and in reference to the Agricultural Chemicals Act: "Where ... an agricultural chemical is causing or is likely to cause damage to the environment, the Director has the power to issue what we call a chemical control order ... again, powers that ... you have to keep in mind in determining what jurisdiction you have at the end of the day ...".

The Board does not agree with the position put forward by counsel for the applicant, particularly if it was intended to suggest that the NRCB does not have jurisdiction respecting such matters. The Board must consider all significant "... social and economic effects" and "... the effect of the projects on the environment" in assessing the public interest. The issues raised in the examples previously cited relate to such effects and must be considered by the Board. It is quite conceivable that the Board might find a project in the public interest only if a particular condition is applied. Referring to the applicant's examples quoted above as an illustration, the Board could conclude that conditions requiring certain design or construction practices are necessary to prevent environmental effects that might otherwise render the project not in the public interest. If such conditions could not be attached, the Board would have no alternative but to reject the application. The Board does not believe that this was the intent of the legislators and the Board does not believe that the wording in the legislation supports such an interpretation. At the same time, the Board fully recognizes that others do have ongoing responsibilities respecting many social, economic and environmental issues. It does have regard for those regulators and review agencies and their responsibilities in considering the issues, particularly as they may relate to any terms and conditions which might be included in an approval.

The other matter the Board believes it should comment on relates to the jurisdiction of the NRCB to consider the viability of the project being assessed. Mr. O'Ferrall, on behalf of Kan-Alta, stated "... clearly the Board would want to have regard, in considering a project, (for) the economic effects of the project from the perspective of the public. But I'm not so certain that the Board has any jurisdiction to inquire into the economic viability of a particular project from the point of view of competition of other golf courses." However, he subsequently said in reference to the matter that "... the economic and social implications of those projects and the economic and social impacts of those projects are included in the statute, we would submit, to -- in many ways, to simply give you something to weigh against the environmental impact."

The Board recognizes that the legislation does not make specific mention of the matter of the viability of proposed projects. However, the reference to social, economic and environmental effects provides broad terms of reference to the Board in its assessment of the public interest. The Board does not believe it would be in the public interest to see the commencement of a project, perhaps with negative environmental or social effects, unless it was satisfied that the applicant had the resources and ability to carry through with the project in an effective manner which would optimize beneficial effects and mitigate adverse effects. The Board considers this particularly important where public lands would be used by the project, as is the case with the Kan-Alta proposal.

5.0 BASIS OF DECISION

The Board is directed by the NRCB Act to review the subject application to determine whether, in the Board's opinion, the proposed development of an additional 18-hole golf course in Kananaskis Country is in the public interest, having regard to the social and economic effects of the project and its effect on the environment. In assessing the effects, the Board must have regard for the existing circumstances in the region, so that the effects may be considered on a cumulative basis.

Recognizing that the project is proposed to be located on public lands and that proceeding with construction of the project would have the potential to change the character and use of the land, the Board believes the first issues it should consider are:

- The justification for the proposed project;
- The general location of the proposed project; and
- The ability of the applicant to implement the proposed project.

If the Board were to conclude that there is sufficient justification for the proposed project and site, and that the applicant would be able to proceed with it, the Board would then go on to assess in detail, having regard for the input received from the participants in the hearing, the effects that would likely result and the mitigative measures that may be taken to reduce any adverse effects. In doing so, the Board would analyze the effects of the proposed project by comparison with a continuation of the current uses of the area. The Board would deal specifically with the following matters:

- Effects on the environment, including
  - water quantity and quality,
  - other water related issues,
  - aquatic life,
  - on-site soils,
  - vegetation, and
  - wildlife.

- Socio-economic effects, including
  - visual resources,
  - recreational use of the area,
  - historical and archaeological resources,
  - economic effects,
  - need for municipal and other services, and
  - the Stoney Tribe.

The Board would make its decision as to whether the proposed project is in the public interest on the basis of its conclusions respecting the various effects that would result, some of which may be beneficial and some of which may be adverse to the public interest.

6.0 JUSTIFICATION FOR THE PROPOSED PROJECT

Prior to dealing with the details of the project, the Board believes it should assess the potential demand for golf in Kananaskis Country to determine whether or not there is "justification" for the proposed golf course.

6.1 Views of the Participants

When addressing the justification for this project, its location with respect to the Province of Alberta's planning policies regarding the use of public lands in this region also came under scrutiny.

Kan-Alta stated that the Board did not have jurisdiction for the administration or allocation of public lands. It indicated that Kan-Alta had a degree of government blessing for this project because of the temporary license which was issued prior to existence of NRCB. It stated also that the KCIC concept permits the provision for controlled recreational development, such as golf courses, if the opportunities for wilderness recreation are not destroyed. Kan-Alta stated that the project, as submitted, would not destroy these opportunities and would not have undue, adverse environmental impacts.

The applicant stressed the high demand for golf in Kananaskis Country and that currently only one out of six requests for tee times could be accommodated at the existing facility. It stated that 80 percent of the rounds played at the current Kananaskis courses are by Albertans and that there is less than a two percent no-show factor at this facility. The benefits of the proposed course being close to the existing Kananaskis courses were also mentioned.

Kan-Alta suggested that courses in Banff and Canmore have significant excess demand which is in addition to that experienced at the Kananaskis course. The proposed course differs from some of the other regional golf course proposals in that it is directed at the Alberta market rather than at the upscale international market. Kan-Alta's position is that the success of its proposal is assured by its location and that the construction of several courses in the area will in itself generate demand. Kan-Alta stated, "People will come to that site regardless of what the market is, where it is, or how many golf courses there are in any given area".

The Sarcee F and G Association questioned the need for an additional golf course, referring to all of the existing and proposed courses in the general area. It said that it sees the NRCB process as involving the allocation of public resources. The Association stated that cultural and eco-tourism are the fastest growing sections in the tourism industry, and should be developed without erecting barriers to the use of public lands.

The other interveners did not comment on the demand for golf, but generally expressed concern at dedicating the use of public land for such a purpose.

6.2 Views of the Board

Prior to dealing with the justification for a golf course in the Evan Thomas Creek area, the Board believes it should make reference to the Government of Alberta's resource management plans and policies for public lands within the Kananaskis region. Current policies would allow a golf course on the public lands for which it is proposed. It is not within the Board's jurisdiction to review the resource policies of the Government, and therefore its jurisdiction relates only to the determination of whether the proposed golf course would be in the public interest of Albertans.

The Board accepts that there is considerable demand to play golf in Kananaskis Country and that the beauty of the area and its proximity to Calgary are such that the demand is likely to continue. The Board therefore sees sufficient justification for the course, provided that a detailed assessment of environmental, social and economic effects leads to the conclusion that it could be built and operated in a manner that would be in the public interest.

7.0 PROPOSED PROJECT LOCATION

This section of the report deals with the question of the general location of the proposed course, in the Evan Thomas Creek area. Details regarding the proposed location will be dealt with later.

7.1 Views of the Participants

7.1.1 Applicant

Four sites, within the recreational Facility Zone 8 of the Kananaskis Country Sub-Regional Integrated Resource Plan (IRP), were evaluated by Kan-Alta as a potential golf course location. These included the Ribbon Creek, Marmot Creek, Wedge Pond and Evan Thomas Creek sites, with the Evan Thomas Creek site being selected for technical and aesthetic reasons. When questioned on the disadvantages of the other sites, Kan-Alta explained that the Ribbon Creek site was intersected by powerlines and was a considerable distance from Highway 40, the Marmot Creek site did not offer sufficient flat land, and the Wedge Pond site would largely fall outside Zone 8.

No specific site descriptions were provided by Kan-Alta for the Ribbon Creek, Marmot Creek or Wedge Pond sites, and no environmental criteria were used to compare and evaluate the alternative sites. Kan-Alta explained to the Board that the initial selection of the Evan Thomas Creek site had pre-dated both the NRCB process and the request for an EIA, and that no detailed environmental comparison of alternative sites had been required during the early planning stages of the project. More specifically, Kan-Alta confirmed that Terms of Reference for the present EIA were developed long after the Evan Thomas Creek site was selected as the preferred location.

When questioned by the NRCB on whether the Evan Thomas Creek site would have been selected as the preferred site if the environment had been the most important selection criterion, Kan-Alta emphasized that very few impacts associated with the Evan Thomas Creek site "have been classified high or medium-high in magnitude".

7.1.2 Sarcee Fish and Game Association

The Sarcee F and G Association expressed concern with the site selection process and the project location, stating that wildlife was clearly not considered in the analysis of alternative sites. However, the Association did not make a specific recommendation for the relocation of the site, and instead focused on the need for an improved data base and on-going monitoring requirements, should the project proceed.

7.1.3 Federation of Alberta Naturalists

The Federation expressed its opposition to any development on the east side of Highway 40 in the vicinity of Evan Thomas Creek, stating that "Our opposition, fundamentally, is to the idea of the failure to hold these large uninterrupted spaces clear of development...." It felt that the construction of a golf course on the existing habitat enhancement sites would set a worrisome precedent that would raise questions about the effectiveness of future mitigation. The Federation stated its preference for the concentration of recreational development on the west side of the highway: "leaving the animals' areas alone."

7.1.4 Trout Unlimited

Trout Unlimited rejected Kan-Alta's proposal in its present form, expressing particular concern for that portion of the development falling on the Evan Thomas Creek floodplain. However, Trout Unlimited did not make a specific recommendation for the relocation of the site.

7.2 Views of the Board

The Board notes that the location of the proposed course was selected over several alternatives primarily for technical and aesthetic reasons. It believes that environmental effects should have been a significant criterion but recognizes the unusual circumstances of this proposal having been well advanced before the NRCB Act was proclaimed.

The applicant's comments regarding the general environmental setting of the alternative sites were useful. Also, the Board notes the designation of the Evan Thomas Creek site as Facility Zone 8 in Government planning documents. The Board also believes it significant that the proposed location is across the highway from the existing Kananaskis golf courses, lodges and a recreational vehicle park. Having regard for the information available, although somewhat limited, the Board is satisfied that the general location of the proposed course is reasonable, subject to an analysis of environmental and other effects.

8.0 ABILITY OF APPLICANT TO IMPLEMENT THE PROPOSED PROJECT

Prior to assessing the details of the project, the Board believes it should address the question of whether the applicant would have the capability to design, finance, construct and operate the proposed facilities. This is particularly important recognizing that the project is proposed for public lands. The Board also believes it should address in this section, the compliance of the proposal with regional land use plans.

8.1 Compliance With Regional Land Use Plans

8.1.1 Views of the Participants

In terms of regional land use planning, development of the project is governed by "A Policy for Resource Management of the Eastern Slopes", approved in 1977 and amended in 1984, and the "Policy for Recreational Development of Kananaskis Country", also announced in 1977. Implementation of the contents of these documents, respectively known as the Eastern Slopes Policy and the Kananaskis Country Policy, is by means of the Kananaskis Country Sub-Regional IRP, approved by Cabinet in 1986.

The proposed golf course is situated in the Kananaskis/Spray Resource Management Area. Management objectives for the area are, in order of priority; maintenance and enhancement/improvement of water resources and the natural environment, provision of leisure and recreation opportunities, maintenance/enhancement of fish and wildlife resources, protection of areas of ecological, archaeological and historic interest and encouragement of research and educational programs, and maintenance of trapping opportunities and hydroelectric generating capabilities.

With respect to the land use zones identified in the Eastern Slopes Policy, the Plan states that intensive recreation and commercial developments are incompatible with the intent of Zone 2 (Critical Wildlife); these uses are permitted in Zone 8 (Facility).

Kan-Alta identified siting the project in Zone 8 as a primary site selection criterion. Initially, the intention was to construct the project along both sides of Evan Thomas Creek and, thus, entirely within this zone. At the environmental overview stage, however, advantages to constructing most of the golf course to the south of the creek were identified, resulting in some encroachment into Zone 2 (Wedge-Evan Thomas Creek area). It was Kan-Alta's view in final argument that "the development is favoured by the planning in place".

This conclusion was questioned by a number of interveners. The Federation stated that the 1977 land use zoning was broad and generalized due to a lack of baseline data. In its view intensive recreational development was not compatible with Zone 2. The Sarcee F and G Association suggested the project was not in accord with planning policy management objectives. Kan-Alta observed that boundaries between the land use zones are based essentially on office air photo interpretation studies and typically imprecise. The applicant advised that on-site ground surveys based on actual habitat evaluation could refine the boundary between Zone 2 and Zone 8. It was its view that the Zone 2 area encroached upon in the current proposal would not be identified as critical habitat under this type of scrutiny.

8.1.2 Views of the Board

The Board is satisfied that the limited degree of encroachment on Zone 2 by the project is generally acceptable within the context of the planning undertaken by the applicant. The Board does not see this as a significant deviance from the intent of the Kananaskis IRP, subject to the detailed assessment of effects on wildlife (Section 9.7).

8.2 Proposed Financing, Design, Construction and Operational Plans

8.2.1 Views of the Participants

Kan-Alta stated that construction of the proposed project is expected to take place over four years at a capital cost of $6.5 million (in 1991 dollars). It advised that the construction schedule cannot be finalized until the project is approved. Kan-Alta would employ experienced engineering and construction firms to ensure proper construction in accordance with all regulations and requirements.

Kan-Alta was firm that the capital cost would not exceed $8-10 million. Above this cost, the project would no longer be economically feasible and, therefore, would not proceed. The project would be fully funded by Kan-Alta Golf Management Ltd. and Paragon Properties Ltd. Kan-Alta anticipates no special provincial funding. Funding for upgrading of the Evan Thomas Sewage Treatment Plant is the normal provincial support for sanitary sewage facilities throughout the Province.

The golf course would be managed and operated by Kan-Alta Golf Management Ltd. The operating season for the project is expected to be from May 1 through October 15 with annual operating expenses of $2.4 million. Kan-Alta said that its experience in operating the existing golf courses would be a great asset in operating the proposed course.

Kan-Alta said it is not yet at a stage where it can assess the economic feasibility of the project with certainty. It assured the Board that, if the project is not found to be economically feasible, it would not proceed. It stated that given Kan-Alta's commitments at the existing golf courses, the company would not be able to "walk away from" this project without financial consequences.

None of the participants appeared to challenge the capability of Kan-Alta to implement the golf project, even though they raised concerns respecting the details of the project layout.

8.2.2 Views of the Board

As regards the applicant's ability to implement the proposed project in the long-term, the Board notes:

- the applicant's successful management of the two existing Kananaskis golf courses;

- the applicant's commitment to not exceed a capital cost of $8 - $10 million, otherwise " ... we will not proceed on this project"; and

- the applicant's expressed commitment to the increased environmental sensitivity of the project being located on public lands as opposed to the project being located on private land.

The Board concludes that Kan-Alta Golf Management Ltd. is capable of implementing the plans for the proposed golf course.

9.0 EFFECTS OF THE PROPOSED PROJECT ON THE ENVIRONMENT

9.1 Effects on Water Quantity

9.1.1 Effects of Irrigation Withdrawals on Evan Thomas Creek Flows

Appropriate discharge data are not available for Evan Thomas Creek. To remedy this deficiency, Kan-Alta analyzed published records for other water courses in the region with long-term hydrologic information. Kan-Alta indicated that the hydrology of the creek is such that, while the stream is recharged by groundwater in the fan apex area, the reverse is true in the lower part of the fan close to Highway 40 where the creek recharges the subsurface groundwater flow system.

Water demand for golf course irrigation is estimated to be 1,900 cubic metres per day (m^3/d), for a 110-120 day period, with a projected annual demand of 209 cubic decametres (dam^3). From Evan Thomas Creek, water would be distributed via an open ditch and buried pipeline system, designed to conserve water by recirculation. In the event of a supply disruption, groundwater would be used as a back-up, allowing restricted irrigation of tees and greens to continue. Kan-Alta indicated that a number of supply alternatives were evaluated. The preferred option involves diversion of water from the creek that flows through the proposed project permitting distribution under gravity. Irrigation with effluent from sewage treatment was considered but judged to be not economically viable.

The applicant stated that withdrawals would normally be maintained below 1 to 2 percent of creek flows. Only very infrequently, perhaps once in 10 to 20 years, as much as five percent of in-stream flow might be diverted. In response to Trout Unlimited, the applicant indicated that there should normally be no noticeable change in stream flow. Responding to Alberta Environment, Kan-Alta confirmed that the volume of water diverted is expected to be equivalent to irrigation demand.

Both Trout Unlimited and Sarcee F and G Association expressed the view that the stream flow data presented by Kan-Alta are inadequate and would not allow a proper assessment of the effect of withdrawals. It was noted that Instream Flow Needs (IFN) have not been investigated. Both interveners recommended that a stream flow monitoring program be initiated.

The applicant suggested that the IFN approach could not be justified, given the lack of accurate data, and stated that estimation of stream flows based on analysis of regional data is a standard procedure. It said that confidence limits could not be assigned but a conservative approach, using data from the driest year on record, was adopted in the analysis and development of the stream flow estimates.

The Board accepts the applicant's estimates regarding the Evan Thomas Creek flows and the effects of withdrawals for irrigation purposes. It recognizes they are based on an analysis of regional data and would not likely be as accurate as would the results of a detailed IFN assessment. The latter is not warranted because withdrawals would be relatively small compared to flows, there are great year to year and seasonal fluctuations in flow, and the potentially affected aquatic resources are limited.

The Board is satisfied that the planned withdrawals for irrigation from Evan Thomas Creek would not have a significant effect on the quantities of water in the Creek. For this reason, the Board would not require a formal stream flow monitoring program as suggested by several interveners. It does however, believe that stream flow data would likely be useful to the applicant in planning and managing golf course operations. If the project goes ahead, the Board would recommend that Kan-Alta consider implementation of a monitoring program.

9.1.2 Effects of Domestic Consumption on Groundwater

No data on groundwater quantity and quality were available for the project site. Regional hydrogeological reports cited by Kan-Alta suggest that groundwater in the foothills and mountains is of good quality, with low dissolved solids, and of the calcium-magnesium bicarbonate-type. Kan-Alta recognized that the regional database is sparse but indicated that it had been supplemented with in-house knowledge of sites with similar geological settings.

Domestic water requirements are projected to be in the 80 to 90 m^3/d range. This supply would be obtained from an on-site groundwater well, drilled close to the clubhouse and completed in a bedrock aquifer, rather than alluvial fan deposits. This would also serve as a back-up supply for irrigation, but would only be used to water critical areas such as tees and greens.

Since site-specific data concerning subsurface conditions and aquifer characteristics are not available, Kan-Alta advised that a field investigation and testing program would be put together in conjunction with the Water Rights Branch of Alberta Environment. As a fall back position in the event a groundwater source satisfactory to Alberta Environment could not be found, the project could be connected into the existing Kananaskis Country water supply system.

None of the interveners raised significant concerns regarding the use of groundwater for domestic consumption, and the Board is satisfied with Kan-Alta's plans in that regard.

9.2 Effects on Water Quality

Several tees and greens would be built within the flood plain of Evan Thomas Creek. They tend to have the greatest application of chemicals and are irrigated intensively. Kan-Alta proposed to raise the surfaces of the tees and greens built within the floodplain to above the 1 in 100 year flood level, and to use armouring to mitigate erosion concerns and prevent washout under flood conditions. Fairways would conform to the elevated structures, allowing floodwater to be conveyed around, rather than adversely impacting the structures.

Kan-Alta also said that the abutments for five maintenance road and cart bridge crossings of the creek would be armoured. With respect to impacts of armouring on stream hydrology, Kan-Alta indicated that the extent of rip-rap placement is so limited that in-stream flows should be minimally affected.

Kan-Alta stated that its chemical management plan was based on experience at the existing golf course. It would apply only biodegradable herbicides at rates recommended by the manufacturer, and use fertilizers carefully. Kan-Alta further stated that all irrigation system flows would be recycled, with no discharge to the creek. Additionally, at the end of the season, ponds on the golf course would be drained and discharged onto tee and fairway areas.

Kan-Alta stated that Alberta Environment was currently testing surface water at the existing Kananaskis golf course. To date, chemicals, including quintozene and 2,4D (Killex), were below detection levels.

Kan-Alta referred to the Bow River Water Quality Task Force Report which concluded that contaminant transport by runoff is the main golf course related water quality issue. It said it would mitigate this concern by using drainage buffers to promote drainage away from the creek.

The potential for direct contamination by fertilizer and other chemicals, applied to tees and greens in the active floodplain of Evan Thomas Creek was a major issue with interveners. They were particularly concerned respecting certain chemicals, such as quintozene which would be used as a fungicide, which they suggested were known to be persistent and to bioaccumulate in certain organisms.

Since the tees and greens would be constructed of on-site granular material, contamination due to leaching was identified as a concern even if the tees and greens were constructed above the design flood level. The interveners were also concerned that washouts of tees and greens during floods could contaminate the Creek. The Federation, the Sarcee F and G Association and Trout Unlimited expressed the view that construction within the floodplain should not be permitted. Failing this, Trout Unlimited stated that structures should incorporate a subdrainage/leachate collection system, supported by a shallow groundwater monitoring program, and fertilizers with low leaching potential should be used with controlled irrigation rates.

Trout Unlimited recommended that, in addition to the measures proposed by Kan-Alta to limit runoff to the creek, runoff from developed areas should be collected and re-used, and that runoff from parking lot and maintenance areas, up to and including the 1 in 5 year rainfall event, should be contained on site.

Trout Unlimited also commented that proposed fertilizer application rates are considerably greater than the provincial average, and recommended a reduction in line with those at other courses in the province.

The Sarcee F and G Association stated that monitoring of surface water quality would be in the public interest and should form an integral part of the development. Trout Unlimited recommended that groundwater conditions should be monitored, to ensure that water quality is not compromised, and to determine the performance of subdrainage/leachate collection systems, if construction of tees and greens in the active floodplain is permitted.

Recognizing constraints in the overall layout of the golf course, and notwithstanding considerable concern respecting the impact of chemicals on the creek, the Board would be prepared to accept the locating of certain tees and greens in the floodplain of Evan Thomas Creek. However, it would condition any approval issued to require Kan-Alta to:

- elevate the top of the tees and greens to above the 1 in 100 year flood level;

- install an impermeable barrier under such structures; and
- armour them adequately to prevent washouts.

The Board is otherwise generally satisfied with the proposed program for applying chemicals to the course and preventing contamination of the creek or other water. The exception might relate to fertilizers and the Board would recommend that the applicant review its intended program and not use more fertilizers than are essential.

The Board notes that application of certain chemicals would require authorization from Alberta Environment. It believes some ongoing monitoring of the possible contamination by chemicals would be needed, and would recommend to Alberta Environment that an appropriate program be put in place. If problems were to become apparent, changes to chemical applications or other corrective actions would be needed.

9.3 Other Water Related Issues

9.3.1 Maintenance of a Buffer Along Evan Thomas Creek and Creek Crossings

Kan-Alta proposes to maintain vegetated buffer zones around surface waterbodies, to mitigate impacts of chemical applications. It said that the buffers would be 30 m wide or greater, wherever feasible, but the proposed layout of the course would not permit that in all instances. Kan-Alta also indicated in response to concerns of interveners that all creek crossings could not be fully perpendicular.

Vegetated buffers were endorsed by Trout Unlimited because they act as a filter for pollutants and suspended sediment contained in runoff, provide a continuous vegetated movement zone along the creek, serve to retard flood water velocities and provide shade and contribute woody debris to the stream. However, characteristics of the buffer along Evan Thomas Creek were a concern to interveners. The Sarcee F and G Association, Trout Unlimited and the Federation recommended buffers be a minimum 30 m wide. DFO expressed a concern with respect to constructing buffers, in areas of riparian vegetation, where creation of positive drainage away from the creek would involve destroying the vegetation. Trout Unlimited suggested that fairway crossings of Evan Thomas Creek should be perpendicular, rather than oblique so that the length of stream without vegetated buffer would be minimized.

The Board notes that the Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife (Fish and Wildlife) does not have a regulated minimum buffer width but uses a guideline of 30 m. Kan-Alta has indicated that it would provide a 30 m buffer where feasible, but this would not be possible in all cases, particularly in the upstream reach on the site where riparian vegetation is dense. The creekside willow vegetation in that area is important for moose as well as of possible value in relation to fish habitat (Sections 9.4.4.3 and 9.7.2.2).

The Board agrees with the need for a buffer zone along Evan Thomas Creek. It recommends that the buffer should be a minimum of 30 m, unless Fish and Wildlife has reviewed a particular situation and approved a lesser buffer. The Board assumes of course that the 30 m setback for chemical spraying as provided in the Agricultural Chemicals Act would be respected.

In terms of the clearing of vegetation along streams for golf fairway crossings, the Board believes such clearing should be minimized to the extent practical. It would not require crossings to all be perpendicular, but would recommend to Fish and Wildlife that it review the golf course layout with Kan-Alta prior to the issuance of the development permit and specifically to approve the detail of all stream crossings and buffer strip widths.

9.3.2 Disposal of Sewage Effluent

Kan-Alta proposes to pipe sewage to the Evan Thomas Sewage Treatment Plant. Trout Unlimited indicated that this increased loading has the potential to increase the existing nutrient enrichment of the Kananaskis River and recommended that alternative sewage disposal strategies be explored, for example effluent irrigation on-site. If the sewage treatment plant were to incorporate phosphorous removal, Trout Unlimited stated that these concerns would be alleviated.

The Board does not believe that the sewage related to the proposed golf development would have sufficient effect on the nutrient loading of the Kananaskis River to create a problem for the upgraded treatment plant. It notes that Kan-Alta considered use of the sewage treatment effluent for irrigation and found it impractical. The Board would have no objection to such use if it could be shown to have no unacceptable effects on downstream water quality and was approved by Alberta Environment.

9.3.3 Implications of Channel Migration and Debris Flow

Although channel changes associated with the 1990 flood event are evident, Kan-Alta stated that the Evan Thomas Creek fan is relatively stable. Although channel switching is considered to be unlikely; armouring of in-floodplain structures is proposed as a mitigative approach.

The applicant stated that debris flow activity on the Evan Thomas Creek fan is low, based on aerial photo analysis, watershed characteristics, and the absence of past debris flow activity. Mitigative measures are not proposed.

The Board does not see debris flow as a problem as it relates to the effects on the proposed golf course. Also, the Board is satisfied with Kan-Alta's proposal as it relates to possible further channel migration of Evan Thomas Creek.

9.4 Effects on Aquatic Life

Sections 9.1 and 9.2 of the report deal with possible effects of the proposed project on the quantity and quality of water in the creek. Such effects could in turn affect aquatic life. This section deals with effects on aquatic life, referencing the early sections as appropriate. The issue of access to the area for sports fishing is dealt with in Section 10.2.

9.4.1 Size of the Fisheries Resource

Kan-Alta's assessment of the fisheries resource in Evan Thomas Creek was based on a review of literature, discussions with Fish and Wildlife, and an electrofishing survey conducted in September 1991. The applicant reported that cutthroat trout, brown trout and brook trout are present in the creek, that cutthroat trout spawn in the upper reaches of the creek, and that a relatively high number of fish were recorded in the creek during the fall survey. The applicant described habitat quality as poor in the lease area, and suggested that most cutthroat spawning occurs upstream of the footbridge.

Because of the limited database, Kan-Alta committed to additional spring and late summer surveys to investigate spawning activity within the lease area. Kan-Alta said it would also conduct mid-summer fish density and biomass surveys to evaluate the relative productivity of the creek, and would complete a thorough habitat inventory along the creek.

Although encouraged by Kan-Alta's commitment to further fisheries surveys, Trout Unlimited recommended that such survey work extend from the mouth of the creek to the falls, and emphasized the need to investigate the status of native west slope cutthroat trout in the creek. It further recommended that Kan-Alta develop contingency plans for the protection of any significant fish populations identified during the supplemental surveys, particularly native west slope cutthroat trout. Trout Unlimited also suggested that on-going monitoring of the fish resource in Evan Thomas Creek was required, if the project were to proceed.

The information available to the Board suggests that the fisheries resource of Evan Thomas Creek in the area of the proposed golf course is very limited. The Board notes that Kan-Alta is prepared to do further surveys. The Board expects that the survey data will be made available to Fish and Wildlife and other interested parties. It further assumes that the data would be utilized, to the extent it is useful, in the ongoing management of the fisheries resource in the region.

Unless the new data suggests a much larger fisheries resource in the golf course area than does existing information, the Board would see little reason for ongoing monitoring.

9.4.2 Fish Mortality due to Sedimentation

The applicant acknowledged that project-related mechanical disturbance of the creek's substrate and resulting sedimentation could result in mortality of fish eggs and larvae, if these life phases were present in the creek. Should subsequent survey work demonstrate the evidence of spawning fish in the creek within the lease area, Kan-Alta stated it was willing to schedule activities potentially affecting water quality to avoid critical fish spawning periods.

Trout Unlimited expressed concern that Kan-Alta failed to recognize incubation periods in its scheduling.

Protective measures proposed by Kan-Alta to reduce sedimentation included:

- construction of temporary sediment traps during the construction phase, particularly in swales which slope towards the creek;
- use of silt fences and matting during the construction phase to control sediment at source;
- sloping of fairways away from creek, wherever possible;

- slope stabilization and revegetation adjacent to the creek as soon as possible after fairway construction;
- use of sod, rather than seed, to establish turf quickly adjacent to creek;
- installation of free span bridges to avoid working in the creek;
- use of cofferdams to isolate bed or bank works from free flowing water; and
- installation of an off-stream sump as a water reservoir for the irrigation system.

The Board is generally satisfied with the measures proposed by Kan-Alta to schedule construction around fish spawning periods and to address the potential siltation problem, but is concerned with the possibility of large quantities of sediment being washed into the creek during and immediately following construction. For this reason Kan-Alta should apply the protective measures with care. In addition, the Board would require Kan-Alta to:

- provide an orientation program for construction workers to ensure they understand the potential seriousness of the sedimentation problem; and
- sod any areas of graded soil within five metres of the creek within five days of completion of the earth movement and compaction.

Depending on the results of Kan-Alta's survey work, the Board would expect it to have regard for incubation and all other matters necessary to ensure that the scheduling would accomplish the intended purpose.

9.4.3 Fish Mortality Due to Degradation of Water Quality

The applicant acknowledged that water contamination from fertilizers, pesticides and surface run-off associated with the golf development would have the potential to affect the fisheries resource.

The Board's assessment of the potential impacts on the quality of water is given in Section 9.2. The Board believes the undertakings of Kan-Alta, the conditions the Board would impose and the recommendations it would make, and the role of Alberta Environment with respect to the use of chemicals, would provide adequate protection against effects on fish.

9.4.4 Alteration of Existing Habitat Conditions

9.4.4.1 Flow Reductions

Several interveners expressed concern over the adequacy of flow data for Evan Thomas Creek and the potential impacts of irrigation demands on fish habitat. As indicated in Section 9.1.1, the Board does not believe the water withdrawals for irrigation would be substantial enough to have a significant effect on the fisheries resource.

9.4.4.2 Channel and Bank Alterations

The applicant stated that project development would not have a significant effect on flow patterns within the active channel of Evan Thomas Creek, as no modification of the active channel's configuration would result from project development. During a flood event of 1 in 10 years or greater, Kan-Alta acknowledged that elevated tees and greens armoured with rock riprap within the floodplain could obstruct the flow of the floodwaters. It noted that the tees and greens would represent a small percentage of the floodplain area and, consequently, would have a very small impact on the flow patterns within the floodplain.

Kan-Alta stated that riprap would be used on the bank of the active stream channel to protect bridge foundations and erosion-prone corners of the channel. It stated further that such riprap would conform to the existing bank configuration and would not constrain the natural movements of the creek.

Trout Unlimited expressed concerns that future unforeseen flood events may require future channelization of the creek to protect the project. It believes that past channelization of the creek downstream from the Highway 40 bridge is largely responsible for the dewatering characteristics of the creek in this area.

The Board recognizes that the existence of the proposed golf course would have potential to cause channel and bank alterations during periods of major flooding, that could negatively affect fish habitat. It believes however, that the measures proposed by Kan-Alta would reduce the likelihood of such occurrences to a very low level. In the Board's view, the risk of such events would not be sufficient to cause denial of the subject application.

9.4.4.3 Loss of Riparian Habitat

Kan-Alta described the lack of riparian vegetation along the creek throughout the lease area, stating that "very large trees are absent from this zone, and there is next to no fallen logs or trees in the creek in this region of the course". Kan-Alta further discussed the lack of fish cover, such as root wads, log jams, and undercut banks, and suggested that the high stream gradient in the area limits the occurrence of such cover.

DFO stated that the creek in the upper 600 m of the lease area exhibited well developed riparian vegetation, and was concerned about project-related losses of this vegetation.

Trout Unlimited proposed that Kan-Alta should do everything possible to maintain the integrity of the riparian zone, suggesting that "a 30-metre-wide strip on each side of the stream should be established as the standard to be worked towards."

There is already somewhat of a lack of riparian fish habitat in the area of the proposed golf course. This may account, in part, for the relatively low numbers of fish in the area. In any case, the Board supports construction and other practices that would minimize the loss of such habitat. Also, as indicated in Section 9.3.1, it believes that buffers should be at least 30 m in width, unless Fish and Wildlife has approved a lesser width in a particular situation.

9.4.4.4 Habitat Enhancement Opportunities

Trout Unlimited acknowledged that the Kan-Alta project may not result in a net loss of productive fish capacity in Evan Thomas Creek, but encouraged Kan-Alta to investigate habitat enhancement possibilities to correct past abuses that Evan Thomas Creek has undergone.

Kan-Alta suggested that there is the possibility of improving pool habitat in the creek, but cautioned that the creation of such pool habitat could actually trap fish at the end of the open water season.

The Board, if it approves the project, would recommend to Fish and Wildlife that it investigate, including consultations with DFO, steps that might be taken in conjunction with the construction of the course, that would enhance fish habitat in the area.

9.5 Contamination of On-Site Soils

The applicant stated that the potential for hydrocarbon spillage exists during equipment fuelling and operation. Chemicals applied as part of the golf course management program may also contribute to contamination.

Careful fuelling practices would be encouraged to mitigate the spillage concern but if a spill occurred contaminated soil would be removed and disposed of in an environmentally appropriate fashion. The applicant also indicated that the fuel storage facility in the maintenance area would be provided with an impermeable liner and subsurface collection system. Once the golf course is operational, fuelling would be carried out in the maintenance area only, so that potential for spills would be reduced.

The Board is satisfied respecting Kan-Alta's proposed approach to avoid contamination of on-site soils.

9.6 Vegetation

Considerable information was presented on vegetation communities and their distributions within the lease area. Much of this information was related to wildlife habitat conditions and capability, rather than the botanical issues discussed below.

9.6.1 Clearing of Vegetation Communities

Of the seven broad communities occurring on site, only the Lodgepole Pine-White Spruce/Feathermoss Forest was considered by Kan-Alta to have a limited regional distribution. Kan-Alta stated that "As a result of the 1936 fire and logging, this mature forest is of limited extent in the development area and throughout the Kananaskis Valley." Kan-Alta indicated that both the Open Balsam Poplar/Yellow Avens Forest and the Willow-Dwarf Birch Shrubland contained "showy species". In the latter community, Kan-Alta explained that "The constant flow of seepage water has created a stable wetland environment which is occupied by a unique and diverse number of plant species."

Kan-Alta estimated that clearing for the development will affect 83 ha of vegetation, with the majority of clearing to occur in the Lodgepole Pine/Bluejoint Forest (40.2 ha), the

Open White Spruce/Buffalo Berry Forest (12.3 ha), and Aspen/Aster Forest (9.1 ha). Kan-Alta stated that a total of only 7.1 ha of clearing would occur in communities with "showy species" (i.e., Open Balsam Poplar/Yellow Avens Forest and Willow-Dwarf Birch Shrubland), while 4.7 ha of clearing would occur in mature forest (i.e., Lodgepole Pine-White Spruce/Feathermoss Forest).

The Federation considered that the development of a golf course is in conflict with the natural community. It stated that the maintenance of an introduced community, such as a golf course, "...requires continuous human intervention in the way of such things as irrigation, herbicides and fertilizer."

Trout Unlimited emphasized the importance of protecting riparian vegetation adjacent to Evan Thomas Creek, and recommended that the clearing of such vegetation be avoided where possible.

The Stoney Tribe did not comment on proposed project-related clearing activities, however, it emphasized the medicinal value of local plants and herbs to Stoney members.

9.6.2 Rare Plants

The applicant indicated that no rare plants were encountered during a July field survey or reported in the literature for the area. The Sarcee F and G Association expressed concerns that a single July survey for rare plants was inadequate to assess the potential occurrence of early flowering or late flowering rare plants and stated that "Further surveys should be required at regular time intervals....".

9.6.3 Weed Introductions

Because of the requirement for imported topsoil, the applicant acknowledged the potential for the introduction of undesirable weed species into the project area. It stated that imported topsoil would come from housing subdivision developments in Calgary, and that Kan-Alta would "work with the loam supplier to ensure that excessively weedy sites are avoided, and importation of non-native vegetation is minimized." Based on its experience with fairway development on the existing Kananaskis golf facility, Kan-Alta anticipated that some weeds would germinate. However, the majority of annuals would not reach maturity due to a combination of competition from fairway grass and regular mowing. Persistent perennials would be controlled by herbicides.

9.6.4 Contamination from Spills

Kan-Alta stated that accidental fuel spills could occur on site, particularly during the construction phase, and that such spills could adversely impact local soils and vegetation. To minimize such impacts, Kan-Alta proposed to implement safety training for appropriate construction personnel and to develop spill contingency plans, outlining the equipment and procedures to be used for spill clean-up.

9.6.5 Views of the Board

The Board has reviewed the evidence presented with respect to vegetation. The Board recognizes that the proposed golf course cannot be built without clearing vegetation and is satisfied that there will not be sufficient clearing of any one vegetation type to threaten its continued existence in the region. The situation with respect to rare plant species is less certain because of the nature of the applicant's survey and the fact that there was only one. If the project were to be approved, the Board would recommend that, as a condition of the development permit, further surveys be conducted at intervals during the flowering season before areas are cleared and graded. Small areas supporting rare plant species should be left untouched where possible or subjected to transplanting where not. The Board is satisfied that the area supporting rare plant species, if any are present, is likely to be small and the requirement should not be onerous. The Board is satisfied with the applicant's proposals to control the introduction of weed species and the spillage of fuels and chemicals.

9.7 Wildlife

9.7.1 Adequacy of Baseline Data

Several interveners expressed concern about the lack of baseline data on wildlife or about the level of confidence that can be placed in data that are available. This concern was raised in two contexts: whether there was sufficient information before the Board for it to make a decision and whether there was sufficient quantitative data to provide a baseline for monitoring.

Kan-Alta explained that its own work was at the overview level of detail and was largely qualitative. It referred to data on the size or density of regional ungulate populations obtained by aerial surveys conducted by Fish and Wildlife since 1973. Although surveys are not conducted every year, the data indicate trends in numbers of mountain goats present on summer range in the area of the Wedge (see Figure 2) from 1976 to 1989, numbers of elk present on known winter ranges in Wildlife Management Unit 408 from 1980 to 1991, numbers of elk wintering on the Wedge from 1982 to 1991, and in numbers of bighorn sheep present on known winter ranges in Wildlife Management Unit 408A from 1973 to 1990. It is not clear whether any of these surveys included the proposed lease area. It appears that, prior to preparation of the application, quantitative population surveys had not been conducted for any other wildlife species in the Evan Thomas Creek area. Dr. Paquet provided evidence on preliminary results of his work on the biology and movements of wolves and on the abundance and productivity of ungulates in the Kananaskis Valley.

The applicant conducted a limited field reconnaissance program over four days during July and August 1990 which was used only to verify information available through the literature and interviews. Pellet group surveys were conducted to obtain information on ungulate use of the project area. Results were used to evaluate the importance of habitats in the lease area for ungulates and to assess the impact of the proposed project on the existing habitat enhancement areas. These comparisons were based on a single transect established within each habitat type/distance category, with the total area sampled within each habitat type ranging from 94.2 to 336.0 m^2. The applicant stated that the data set is too limited to enable the calculation of confidence limits. A small mammal snaptrapping program was also conducted during this period. Forty traps were set for either one or two days in 8 of the 11 habitat types identified. A habitat map of the lease area was prepared at a scale of 1:7500 based on a vegetation map prepared at the same scale. Assessments of habitat suitability for various species were qualitative and based on professional judgement.

The Sarcee F and G Association expressed the view that information provided by the applicant about habitat carrying capacity, movement corridors, and use of the area by carnivores, was inadequate for assessment of environmental impacts. The Federation also indicated concern over lack of baseline data, particularly in relation to large carnivores and to rare, threatened or endangered species. Dr. Paquet stated that he believed there was a need for more baseline information on the abundance, productivity and movements of ungulates in the proposed project area. He also identified the need for additional information on large carnivores, and on indicator species of small mammals, birds, amphibians and reptiles.

The Board accepts that there are insufficient data available to make accurate quantitative estimates of the potential impact of the proposed golf course on wildlife and that this makes it difficult to deal with requirements for detailed designs, enhancement programs or operating practices intended to reduce or avoid impacts. However this does not mean that the Board cannot make a decision about the application before it. It is possible to reach qualitative conclusions about effects on wildlife. Furthermore, the Board can make decisions which incorporate measures to manage some uncertain potential impacts. The Board also recognizes that available data would probably not provide a satisfactory measure of baseline conditions for a monitoring program. Inability to remedy this before construction begins would limit the capability of a monitoring program to detect changes, but in the Board's view this is not a severe enough problem to justify a denial or delay of the proposed project if it is otherwise judged to be in the public interest. Monitoring is the subject of a recommendation in Section 9.7.7.

9.7.2 Effects on Wildlife

9.7.2.1 Wildlife Mortality

Kan-Alta identified a number of ways in which the project could result in mortality of wildlife. These include death of small mammals and the eggs or young of birds during site clearing or grading, road kills of ungulates, increased hunting pressure due to improved access, and removal of problem wildlife.

The applicant plans to reduce bird losses by avoiding construction during the nesting period. None of the interveners that appeared before the Board commented on the issue of wildlife mortality during project construction.

Information presented by the applicant indicates that small numbers of deer, elk and bighorn sheep are reported killed each year along Highway 40. Total numbers of ungulates killed along the portion of the highway extending from the Highway 1 junction to a point five km south of the proposed golf course ranged between 5 and 13 annually from 1982 to 1988. The applicant has estimated that traffic volumes would increase by five percent from 1989 levels as a result of the project, but that increases in wildlife mortality would be "minimal to nonexistent". The applicant indicated that the principal concern is the potential mortality of elk in the vicinity of the proposed golf course if it becomes used as a winter feeding area. Use of warning signs and reduced speed limits were suggested as possible mitigative measures in the event that road kills do increase.

The Sarcee F and G Association suggested that sites of frequent road kills may be found where ungulates avoid development along major movement corridors. This issue is discussed further in Section 9.7.4. Dr. Paquet indicated that highway mortality did not appear to be a major cause of death of ungulates in the region at present. He stated that predation is the major mortality factor affecting elk in the Kananaskis region, and that the incidence of road kills is low in comparison to other areas.

The applicant concluded that the proposed project would provide increased access for hunters, which could result in increased mortality or harassment of wildlife. It recommended restriction of hunting within the development area as a means of dealing with the problem. Although the Sarcee F and G Association expressed concern that the proposed project would contribute to reduced hunting opportunities in the region, it agreed with the applicant that if the project proceeds, the Evan Thomas Creek Recreation Area, in which hunting is not allowed, should be expanded to include the proposed project area (Section 10.2.1).

The applicant indicated that, during the golf season, a number of wildlife species, including elk, bears, beaver, ground squirrels and geese, may have to be controlled to minimize damage to the golf course or to ensure human safety. Elk were described as being a serious problem at the Banff Springs golf course where they have caused damage to greens and fairways, and have attacked golfers. The applicant noted that these problems had not been reported at the existing Kananaskis golf courses and that it is not known whether elk would be a nuisance species at the proposed golf course. The applicant also noted at the hearing that, although the proposed development could increase the potential for bear-human interactions, no problems had been reported at the existing Kananaskis golf courses. It suggested that with proper garbage handling there would be no impact on these species.

Kan-Alta acknowledged that it might be necessary to remove nuisance beaver and ground squirrels. Beaver reportedly cause minor problems at the existing golf course by causing flooding or cutting down trees on the edges of fairways. Removal of problem beaver is carried out by Fish and Wildlife. Burrowing by Columbian ground squirrels was described as a problem at the existing Kananaskis golf courses, and the applicant indicated that this species would be likely to constitute a nuisance at the proposed golf course as well. Problem animals would be dealt with by Kan-Alta through trapping or the use of rodenticides. Rodenticides would be used in small quantities around the periphery of the proposed golf course.

Views of other interveners focussed primarily on potential impacts on bears resulting from interactions with humans. Both the Sarcee F and G Association and the Federation expressed a general concern over potential impacts on grizzly bears, because of their threatened status in the province. Dr. Paquet also expressed concern over potential mortality of bears noting that "because of their nature, they tend to be targeted for removal". He suggested that black bears may be as threatened as grizzly bears because of loss of montane habitat.

The Board agrees with Kan-Alta that deaths of wildlife could be reduced by scheduling construction to avoid certain periods of the year and, if the project proceeds, recommends that Kan-Alta adhere to the constraints on scheduling identified in its application.

The Board recognizes that interference with movements of large wildlife species can funnel highway crossings into certain locations. If this were to occur, and to be detected by a monitoring program or by the incidence of road kills, it would provide an opportunity to reduce long-term death rates by erecting animal crossing signs or reducing speed limits at appropriate locations. If the Board were to approve the project, it would recommend that KCIC and Fish and Wildlife review the available information three years after construction of the golf course and take appropriate action to reduce road kills at that time.

The Board accepts Kan-Alta's reasoning with respect to restriction of hunting in the vicinity of the project, if it goes forward, by enlargement of the Evan Thomas Recreation Area to include the entire golf course property. The Board would recommend that Fish and Wildlife take this action.

The Board believes that removal of problem ground squirrels and beaver is not a matter for significant concern. The need to remove or apply aversive conditioning to aggressive elk is unlikely to arise unless the elk become habituated to the proposed golf course. Dr. Paquet's evidence suggested that this has not occurred on the existing golf course. Should the project proceed and aggressive elk become a problem, the Board considers that aversive conditioning or relocation of small numbers of problem animals would not have sufficient impact on the regional population to be of major concern. The Board would therefore accept such treatment of aggressive elk should it prove necessary. The Board notes that should the project proceed, and measures be taken as recommended in Section 9.7.7 to enhance elk habitat away from the golf course, fewer elk should be attracted to the course and the potential for conflicts with golfers would be reduced.

The Board is concerned about losses of black, and particularly, grizzly bears that could result from bear/golfer interactions. During active use of the course, bears moving through the area could be attracted by food or odours and come into contact with golfers. Bears which remain in the course area for longer than a few days during the golf season would almost certainly have to be removed. Although good garbage control, which the Board recommends, can reduce the attraction of the area to bears, bears may still elect to remain. The Board believes that even with excellent garbage control, aversive conditioning, or any other measures that may be applied, incidents requiring relocation or destruction of bears may occur from time to time. Although grizzly bears are a vulnerable species, the Board does not believe that the frequency of such occurrences would be high enough to significantly impact the regional population. It finds the measures proposed by the applicant with respect to garbage control and relocation of problem animals as satisfactory as they can be.

In summary with respect to wildlife mortality, the Board concludes that impacts during construction could be minimized by careful scheduling. Additionally, hunting pressures could be relieved by expanding the restricted hunting area. There would probably be additional traffic and therefore more road kills, but these could be mitigated by warning signs and lower speed limits. Some increase in animal/human conflicts may occur and could require relocation of animals or other actions. These would be undesirable, but in the Board's judgement, like other effects on wildlife mortality, would not be serious enough as to cause the application to be denied.

9.7.2.2 Habitat Alteration

Kan-Alta identified a number of potential effects of the project on wildlife habitat. During construction there would be complete removal of forest cover and ground cover on fairways and facility sites. The applicant estimated that 83 ha or approximately 50 percent of the lease area would be cleared for development of the proposed golf course facility. Over one-half of this would be lodgepole pine and lodgepole pine-aspen forest. In the applicant's opinion, project construction would result in the loss of 23 ha of important ungulate habitat and 20 ha of moderately important bear habitat. This would include loss of 67 percent of the open white spruce habitat, which was identified as the habitat type most heavily used by deer, and 65 percent of riparian willow habitat, which receives high use by moose. The applicant has also proposed to construct portions of a driving range, parking lot and maintenance facility within the habitat enhancement area at the north end of the development site. Impacts of habitat loss that would result from site clearing were rated by the applicant as being of low to moderate magnitude for the wildlife species considered.

Further alteration of the vegetation cover could result from blowdown of trees along the edges of clearings, accidental fire, disruption of drainage patterns, erosion and deposition of sediments, accidental fuel spills, and air emissions or dust. The applicant indicated that risks associated with accidental fires, fuel spills, and air emissions or dust could be eliminated with proper mitigation. Residual impacts of low magnitude could result from blowdown, drainage alteration and sedimentation.

The Board accepts the applicant's estimates of the amounts of habitat likely to be removed or otherwise altered by the project as realistic. The principal uncertainty pertains to the potential for grading, armouring and other work within the floodplain of Evan Thomas Creek to alter riparian habitats. Since the location and extent of armouring, channel protection and recontouring were not detailed in the application, it is difficult to evaluate the potential long-term effects of the project on riparian habitat. However the most valuable riparian habitat on the site is at the upstream or eastern end and the consequences of construction are likely to be greater downstream. Provided adequate buffer strips are left in areas valuable to wildlife (see Section 9.3.1), the Board believes that impacts on riparian habitats will not be sufficient to have a significant effect on regional wildlife populations. The Board also has concerns related to the loss and alienation of habitat within the habitat enhancement area at the north end of the site. The Board's views on this issue are dealt with in Section 9.7.3.1.

9.7.2.3 Habitat Alienation and Habituation

Habitat alienation is the term that is now widely used by biologists to describe the abandonment or reduced use of habitat by wildlife as a result of human disturbance. The extent of habitat alienation can be expected to vary from species to species, and is dependent on both the nature and frequency of disturbance. Some animals may learn to use areas that are repeatedly or continuously disturbed. Such animals are said to become habituated to whatever form of disturbance is involved. Habituation may allow a larger population to be supported by a disturbed habitat, but it may alter the behavior of animals in a way that can make a population more vulnerable to disease, climatic extremes and predation. Habituation might also bring about changes in the genetic composition of a population that may be maladaptive in the long term.

The issue of habitat alienation was raised on numerous occasions during the hearing. The applicant acknowledged the likelihood that certain wildlife species would be displaced from the development area: "Various species have different sensitivities to noise and activity, and are displaced different distances from the sources of disturbance; generally, ungulates are displaced from habitat within 500 m of the source and furbearers, such as hare and coyote, 100 to 200 m from the source" and: "Disturbance will displace all but less sensitive, smaller species from the development area". The applicant also indicated that habitat alienation would continue throughout operation as well as during construction: "Human activity (e.g., golfers, maintenance personnel) and noise associated with operations of the golf course will continue to displace wildlife from habitat adjacent to the course during late spring to early fall period. Despite disturbance, some mammals and birds will habituate to disturbance and will reside in buffer zones between the fairways. Species less sensitive to disturbance such as deer will continue to use habitat at the edge of the golf course, but will not utilize habitat in the centre of the lease area."

Kan-Alta estimated that 70 ha of habitat would be lost through habitat alienation for species expected to be displaced within 200 m of the development, and 170 ha would be affected for species displaced 500 m from the site. The applicant estimated that these losses would involve 23 ha of important moose habitat, 55 ha of important deer habitat, and 48 ha of moderately important elk habitat. This would include 37 ha within the existing enhancement sites.

In terms of the impact that habitat alteration and alienation would have on the size of wildlife populations in the area, the applicant concluded that the project would not have a long- term effect on numbers of wildlife in the area. It noted that "with mitigation and enhancement measures in place, the impact of disturbance on local wildlife populations could be medium in magnitude, although the decreases in population numbers should not last longer than a few years". The applicant predicted a 1 to 15 percent decrease in ungulate populations in the immediate region over the first few years of development, followed by an eventual increase in ungulate numbers due to improved habitat and restricted hunting. Displacement of one or two black bears is predicted, although "no decline in the regional population is expected". The applicant indicated that other large carnivores, including cougar, lynx, coyote, grizzly bears and wolf, would "shift their territories away from the development area" and should not be adversely affected. Populations of varying hare and squirrels would be expected to decline by 1 to 10 percent due to habitat loss and disturbance; however, the applicant concluded that, since both species have a high reproductive rate, "populations of these species should return to pre-disturbance levels within a year or two of vegetation clearing". Small mammals including mice, voles and shrews would be expected to "replace their numbers within one season".

The Sarcee F and G Association expressed concern over the total amount of habitat alienation that has occurred to date within the Kananaskis Valley and the possibility that further alienation resulting from the proposed project would block access by wildlife to the Wedge. Representatives of the Association presented a map illustrating the amount of development that has taken place within the region and an estimate of the amount of habitat alienation that has been associated with this development. They suggested that much of the valley bottom, which is important to wildlife because of the availability of forage and thermal cover, has already been affected by construction of the highway, trails, utility corridors, and recreational development. They contended that the extent of habitat alienation that has already occurred reduces the availability of alternate habitat in the vicinity of Evan Thomas Creek. The Sarcee F and G Association suggested that any analysis of factors influencing elk and other wildlife populations in the region would be incomplete unless it addressed the cumulative effects of development.

Dr. Paquet commented on the probable effects of disturbance during the construction period on certain wildlife species. Dr. Paquet reported that he had monitored the effects of construction activity on radio-collared elk in Banff National Park and almost always observed displacement, at least during the construction period. He also observed displacement of wolves and coyotes as a result of even minor construction. Dr. Paquet stressed the importance of timing windows to minimize construction impacts on wildlife.

Dr. Paquet explained that displacement of ungulates from the proposed golf course would probably result in a population decrease. He said that when animals are displaced to another area they are forced to compete with animals that are already there. As a result some animals do not survive and a population decline is likely to result. Competition for habitat can cause a 'ripple' effect that may be quite extensive. Dr. Paquet stated that this problem applied to bears as well. He noted that, if it occurred during a critical season, even temporary displacement could lead to a population decline.

Another matter affecting the long-term displacement of animals from a disturbed area is habituation. Elk are a particularly adaptable species and the habituation of elk to the golf course at Banff was raised at the hearing by several participants. Dr. Paquet said that in Kananaskis Country: "...elk are not very approachable. We are finding 200 m is about as close as we can approach, in contrast to the Banff area where we can literally walk up and touch them." Dr. Paquet suggested that hunting and other adjacent land uses and topography are factors that influence whether or not elk might become habituated to a golf course.

Although Kan-Alta did not provide a comprehensive review of scientific literature dealing with the effects of similar types of disturbances on wildlife, its estimates of the distances at which displacement is likely to occur and the amount of habitat alienation that would result from this displacement seem reasonable to the Board. The assumptions used by Kan-Alta in making these estimates were not contested by any of the interveners. The Board does not however, accept the applicant's argument that habitat losses, resulting from either habitat alteration or habitat alienation, will have no long-term effect on the size of affected wildlife populations. Kan-Alta speculates that animals displaced from the development area would occupy alternative habitat, although it did not demonstrate that alternative habitat exists in the area. The Board agrees with Dr. Paquet that displacement of wildlife is likely to lead to competition with resident animals, reduced survival, and lower populations. If the amount of usable habitat is reduced, the maximum possible population of a species will be lower and the number in the population will be lower at least some of the time. The Board also agrees that evidence from the existing courses suggests that elk would likely not habituate to the proposed golf course.

9.7.2.4 Numbers of Animals that Might be Affected

The Wedge-Evan Thomas Creek area has been identified as a critical wintering area for bighorn sheep, elk and mountain goats. Kan-Alta noted that neither bighorn sheep nor mountain goats are known to use the proposed lease area, although a goat mineral lick has been recorded approximately two km southeast of the proposed site. The applicant indicated that the development area might be used by several different groups of elk, including a group that is known to winter on Wedge Mountain to the southeast of the site, a group that is resident year-round in the Kananaskis Valley, and a "transient population" that moves throughout the region. The applicant presented results of a number of aerial surveys conducted by Fish and Wildlife between 1980 and 1991. The results show that the numbers of elk that have been recorded have been highly variable over this time, ranging between 16 and 67 animals on Wedge Mountain and from 21 to 193 animals in Wildlife Management Unit 408. An additional 55 elk were recorded in the Kananaskis golf course area in 1991 and two groups, totalling 62 animals were recorded there in 1992. The applicant suggested that these elk may be part of a group that normally winters on Pigeon Mountain, but noted that the seasonal movements of elk in the Kananaskis Valley are poorly understood. Kan-Alta did not provide data on the number of elk actually using the proposed development area, but did express the opinion that only a few elk, two or three deer, and two or three moose would likely be displaced by the proposed project.

Kan-Alta said that the development area is used by several large carnivorous species, including grizzly bear, black bear, cougar, wolf, coyote and red fox, but noted that, with the exception of coyote, numbers are probably quite low. A male and sow grizzly were reported near Evan Thomas Creek, although the lease area has been rated as poor quality habitat for this species. The applicant estimated that one or two black bears may use the lease area but did not provide estimates for the remaining species. The applicant also stated that no other rare, threatened, or endangered wildlife species have been reported in the vicinity of the lease area.

Kan-Alta's estimates of the numbers of ungulates using the proposed development area appear to be lower than estimates provided by Dr. Paquet. Since his data are based on field surveys, the Board considers that Dr. Paquet's estimate of 40 to 50 female elk and 10 adult moose (his estimate did not include calves) represent the most reliable population estimates that are currently available. What is not known is the proportion of time spent by these animals within the area that might be affected by the proposed development, and the importance of the habitats within this zone relative to the habitat in the remainder of the populations' home ranges. Dr. Paquet said that the existing golf courses receive some use by elk and that elk have not habituated to them (see Section 9.7.2.3). However, the Board did not hear evidence to enable it to determine to what extent elk and other ungulates would continue to use the development area.

Dr. Paquet provided quantitative information on use of the proposed development area by wolves, indicating that the Peter Lougheed wolf pack spent approximately 14 percent of its time within the proposed development area. Dr. Paquet indicated however, that while he thought that wolves would be temporarily displaced during construction periods, they would continue to use the area, at least during winter.

The Board does not consider available knowledge of wildlife populations, movement patterns, and range use in the Kananaskis Valley adequate for an accurate quantitative assessment of the likely consequences of the proposed golf course. However, the Board believes that it can assess the regional significance of the various impacts that have been identified on the basis of the information that is presently available. In the case of elk, for which population data are the most complete, it appears that a substantial portion of the regional population may use the proposed development area for either summer range, winter range, or as a movement corridor. The Board believes that impacts resulting from habitat removal, habitat alienation and disruption of movements could be significant. However, development of a mitigation/enhancement program to ameliorate impacts on elk (Section 9.7.3.2) would increase the Board's confidence that regional populations would not be threatened. The Board also believes that regional populations of the other ungulate species that are known to use the proposed development area would not be threatened.

Although the number of animals likely to use the area at any one time are relatively small, the Board has concern over the potential impacts of the proposed project on regional populations of large carnivores as noted in Section 9.7.2.1. If the proposed project were to constitute a mortality sink, or to contribute further to a mortality sink that already exists in the developed portion of the Kananaskis Valley, impacts on regional populations of grizzly bears and black bears may be significant. (A mortality sink is an area where wildlife mortality is occurring. When resident animals are killed others move in to replace them, only to meet the same fate. Non-resident animals moving through the area are also at risk.) The Board is satisfied that Kan-Alta would take what measures it could to avoid this problem, but concludes that some additional mortality of bears would be possible. In the opinion of the Board, provided the proposed mitigative measures were taken, the potential impact on bears would be insufficient to justify denying approval of the project. The Board accepts Dr. Paquet's evidence that wolves, and presumably other canids, would continue to use the area after development and therefore would not be significantly affected.

Virtually no information was presented to the Board on use of the proposed development area by other groups of wildlife, including birds, amphibians and reptiles. Of particular concern is the possible occurrence of rare or uncommon species. In Section 9.7.3, the Board has required that, if the project is approved, the matter of rare or uncommon species be addressed in the preparation of the mitigation/enhancement plan.

9.7.3 Habitat Enhancement

9.7.3.1 Encroachment on the Existing Habitat Enhancement Area

Concern was expressed by interveners that the proposed project could adversely affect ungulate use of a habitat enhancement area at the north end of the proposed development site. The area in question consists of a number of forest clearings and thinned stands that were established to replace elk habitat lost to the existing golf course. Under the proposed development plan a portion of the largest clearing and some of the forested cover adjacent to this clearing would be used to construct a driving range, parking lot, and maintenance facility.

The applicant's justification for encroaching on the enhancement area is based on what it considers to be the spatial and topographic requirements of a "world class" golf course. Kan-Alta pointed out that the proposed golf course is constrained by the presence of the Critical Wildlife Zone on the east side and by Highway 40 on the west side. It also justified use of the enhancement area by suggesting that the large clearing, which would be directly affected, has limited value to wildlife because of its width, and that the mitigative/enhancement measures proposed would actually increase its value to wildlife. Kan-Alta proposes to build a berm along the edge of the access road and around the area where the parking lot and clubhouse would be located and to plant trees to screen the enhancement area from golf activity.

Kan-Alta's proposed use of this area was opposed by the Sarcee F and G Association and the Federation, on the grounds that the proposed project could limit wildlife use of an area that was developed to compensate for loss of habitat when the existing golf courses were developed. The interveners said that construction on the enhancement area "...sets a worrisome precedent that raises questions about the effectiveness of future mitigation".

In the opinion of the Board, the two issues that need to be considered in determining whether encroachment into the habitat enhancement area is justified are the value of the enhancement area for wildlife and the probable effectiveness of the mitigative measures that have been proposed by Kan-Alta. With regard to the issue of habitat, the applicant contends that the size and shape of the clearings limit ungulate use, and that animals are not using the centre of the largest clearing. However, pellet group count data presented by the applicant indicate that, while use of the smaller clearing was higher than levels of use recorded in the larger clearing, elk use of the large clearing exceeded levels recorded in all other habitat types sampled with the exception of open white spruce habitat along Evan Thomas Creek. In addition, pellet group densities reported for the centre and edge of the clearing suggest no difference in use by elk and higher use of the centre in the case of moose. The applicant agreed with other interveners who suggested that it takes a number of years for a forage enhancement area to become fully effective, and that use of these clearings might continue to increase as regrowth proceeds.

Dr. Paquet said that there is a good deal of uncertainty about the effectiveness of habitat enhancement measures and that little observational data are available. Habitat enhancement measures are essentially experimental. Notwithstanding the inadequacies of the data discussed in Section 9.7.1, and the uncertainties mentioned by Dr. Paquet, the Board is not convinced that the existing habitat enhancement area is of no value.

If there is a reasonable possibility that the enhancement site is effective in mitigating the effects of the existing golf courses, any reduction in its use by ungulates resulting from the proposed project would be of relevance. The Board has reviewed the applicant's proposals for mitigating the effects of the proposed project on the enhancement area. The Board concludes that the effectiveness of the existing enhancement area is dependent in part on the presence of secure cover adjacent to the clearings and on the availability of movement corridors that provide access to the site. The proposed development could remove essential cover on the south side of the enhancement area and could deter ungulates from using the area. Dr. Paquet said that berms had been used successfully for mitigation in areas cleared in conjunction with forestry operations in Oregon, but pointed out that those results may not be applicable to the Kan-Alta site. The Board has examined the proposal for a berm in some detail and concluded that to be effective such a berm must be of sufficient height to provide a visual barrier. The elk that would remain in the area after construction would be subject to disturbance if they are able to see activities over the berm. Whether or not the berm and tree plantings are effective, there would still be significant encroachment on the enhancement area itself and, in the Board's view, reduction in its potential use would occur.

The Board has examined the proposed layout for the golf course and noted that there appears to be room within the lease area on the north side of the creek to move some of the facilities so that they would either not encroach or encroach less on the enhancement area and would, perhaps, interfere less with the east-west movement corridor (Section 9.7.4). If it approves the project, the Board would require that construction of facilities on the north side of the creek not proceed until Kan-Alta has reviewed their specific locations with Fish and Wildlife, and the Division has approved them.

9.7.3.2 Habitat Enhancement for the Entire Project

Kan-Alta took the position that development of mitigation and enhancement plans "should come at the time of the detailed enhancement plans and in consultation with

Kananaskis Country and Alberta Fish and Wildlife." It also noted that it has had continuing discussions with Alberta Forestry, Lands and Wildlife concerning the mitigation plan and that its decision to defer development of the mitigation plan until it received project approval was acceptable to that Department. However, Kan-Alta did identify several measures that would be adopted to replace habitat that would be lost. These included improvement of the existing ungulate enhancement area and development of new forage enhancement areas and wetlands.

Measures proposed for the existing enhancement area, in addition to mitigative measures discussed in the previous section, include planting of "tree islands" in the large clearing to provide cover for ungulates and seeding portions of the clearing with a grass-legume mixture palatable to ungulates. The applicant also said it would develop one or two small enhancement sites in the vicinity of the lease area to provide additional browse for ungulates:

> "For the Evan Thomas Creek area, lodgepole pine thinning and the clearing of small forested areas are recommended as habitat enhancement projects. The clearcuts should be a few hectares in size, the edges convoluted, tree islands retained, the site scarified, stumps removed and the thick duff (needles) burned to encourage the early establishment of grasses and shrubs, and the site should be reseeded with grass-legume seed mixes that are palatable for ungulates."

Kan-Alta also indicated that some ponds would be constructed within the golf course to support waterbirds. This would involve grading portions of the shoreline to gentle slopes, constructing nesting islands, and planting aquatic vegetation.

The Sarcee F and G Association contended that details of the mitigation/enhancement program need to be identified before the environmental consequences and net benefits of the project can be understood. It noted that "In particular, the proposed habitat enhancement should be designed in detail so that its effectiveness as a mitigation measure can be evaluated". The Association also stated that insufficient information currently exists to either evaluate the effectiveness of the existing habitat enhancement program or to develop further enhancement programs. Information on current animal numbers, current habitat use and habitat carrying capacity are needed to develop an effective mitigation program.

Dr. Paquet expressed agreement with the mitigation measures that had been suggested, but noted that some of these procedures are experimental and unproven. He indicated the need for a research and monitoring program to evaluate the effectiveness of specific mitigative procedures: "We need to address these things in a very scientific way where we have areas that are controlled and areas that are uncontrolled and ongoing research, an experimental design that will tell us whether a particular mitigation will function or not". He also noted that enhancement programs that are conducted to benefit a particular species may have adverse effects on other species and may not benefit the community as a whole.

The Board has reviewed all of the evidence before it with respect to the need for, and methods of, habitat enhancement to compensate for lost and alienated habitat. The Board is aware that such methods are largely unproven and that information gathering and analysis is required to design and test them. The Board is also aware that habitat enhancement is habitat alteration and that habitat enhancement for one species may be habitat loss for another. Nevertheless, the Board believes that habitat enhancement has a place in renewable resource management and it does not believe that the project would be in the public interest if it were to proceed without a well planned and well executed attempt to compensate for lost and alienated habitat. If the project were to be approved, the Board would require that the applicant develop a mitigation and enhancement plan satisfactory to Fish and Wildlife. The Board believes that such plan should include the following elements:

- Information gathering and analysis necessary to design an appropriate mitigation/enhancement program;
- A program of monitoring animal use of the proposed golf course and existing and proposed enhancement areas to determine whether the methods adopted have been effective. This should be done in conjunction with Fish and Wildlife;
- Measures to conserve or improve the value of the existing ungulate enhancement area;
- Measures to enhance ungulate habitat to the east of the proposed project area;
- Measures suggested by the applicant with respect to waterfowl habitat, if considered appropriate by Fish and Wildlife; and
- Measures to avoid or mitigate impact on rare species of amphibians, reptiles, birds and mammals should any be found to reside on site.

9.7.4 Wildlife Movement Corridors

Dr. Paquet provided evidence that the ungulates and large predators that inhabit Kananaskis Country may travel considerable distances during the course of their normal activities. Their movements include seasonal migrations between winter and summer habitats, long-range nonseasonal migrations and incidental or local movements. The term "movement corridor", as it was used during the hearing, was broadly applied to traditional routes used by wildlife for any of these kinds of movements. Concern was expressed that the development might obstruct wildlife movement corridors.

Kan-Alta stated that some wildlife, particularly elk, may migrate seasonally between the upland habitat in the Evan Thomas Creek watershed and the Kananaskis valley bottom, following game trails that parallel both sides of Evan Thomas Creek. Other species, including grizzly bears, may also use this east-west corridor. The Sarcee F and G Association and other interveners contended that the significance of the Evan Thomas Creek corridor to regional wildlife populations is unknown.

Kan-Alta recognized that the proposed development could disrupt wildlife movements between the upper Evan Thomas Creek watershed and the valley bottom. It stated that no specific mitigation had been proposed to deal with the potential disruption of these wildlife movements: "We came to the conclusion that there was very little we could do to alter the problem dramatically, other than not be there." Kan-Alta rated the magnitude of residual impact as "medium to high". The applicant expressed the opinion that restricting development to one side of Evan Thomas Creek would allow wildlife to continue to use the opposite side as a movement corridor, but it did not wish to do so because it would restrict the use of the creek as an aesthetic resource.

Kan-Alta observed that the significance of the Kananaskis Valley bottom as a wildlife movement corridor is poorly understood, but disputed the suggestion that the proposed development might disrupt north-south movements of wildlife. The applicant argued that the valley is wide enough to accommodate development and wildlife. It specifically referred to slopes to the east of the proposed lease site as a potential alternate corridor for north-south movements. The applicant did suggest that north-south movements by animals seeking access to Evan Thomas Creek as a source of water could be disrupted by the proposed development. A drainage channel along the southeast border and a pond at the eastern edge of the site were identified as alternate sources of water for wildlife.

The Sarcee F and G Association argued that suitable travel routes for wildlife in the vicinity of the proposed lease site are constrained by topography and limited by the animals' needs for food and cover during migration. Particularly in winter, wildlife prefer to move along routes that require the least expenditure of energy. The Association agreed with the assessment of the applicant to the extent that the proposed lease site straddling Evan Thomas Creek potentially blocks east-west wildlife movements. It criticized the lack of baseline data on animal movements and argued that the development should not proceed without a proper assessment of the significance of the Evan Thomas Creek corridor to regional wildlife populations. The Association said that baseline data on animal movements should be collected before any development of the site is allowed.

The Sarcee F and G Association was also concerned that the proposed development could block long range north-south movements in the Kananaskis Valley bottom. Although data on elk movements are scant, records from radiotelemetry studies show that elk from the Wind Valley and Bow Valley Provincial Park sometimes migrate to the Evan Thomas Creek area. Elk from Peter Lougheed Provincial Park and further south have been observed to travel almost to the Evan Thomas Creek area. Several interveners suggested that elk are likely to travel between regional sub-populations, which might entail north-south movements through the proposed lease area. Dr. Paquet presented radiotelemetry and tracking data that showed that wolves move north-south along the Kananaskis Valley bottom through the existing and proposed golf sites.

The Sarcee F and G Association argued that the narrowing of the Kananaskis Valley immediately south of the proposed lease site forms a natural funnel through which migrating wolves and elk, which favour the valley bottoms as corridors, must flow. It speculated that existing developments on the west side of Highway 40 (i.e. hotels, golf courses and the RV park) may deflect animals to the east side of the valley. In support of this argument it interpreted the locations of road kills as evidence that wildlife skirt the existing developments. The Association suggested that the proposed development on the east side of Highway 40, in conjunction with the existing developments on the west side, could form an effective plug, preventing north-south migration. In making this argument, it asserted that the zone of alienation surrounding each development blocks potential travel corridors.

Dr. Paquet attempted to clear up what he considered to be confusion about the nature of movement corridors:

> "Most travel corridors or travel lanes are not restricted to a single, maybe, 50 metre-wide strip unless they are somehow topographically or physiographically bottlenecked. They usually are dispersed over an area and they will fan out. You will find -- within a wider corridor, you may find five or six different travel lanes.

> And those can be used either individually, by individual animals, or by groups of animals. And it's also important to understand that these movements vary seasonally, so there is a spatial aspect and temporal aspect that has to be considered."

Dr. Paquet stated that he does not consider the proposed site to constitute what Sarcee F and G Association described as a "... somewhat of a restriction to movement." He based this on his winter tracking observations of the present Kananaskis golf courses, which have shown use of the entire course. However, he noted that he had no observations during the period when golf is played or from the time before construction of the courses. He also reported observations of radio-collared elk moving from as far away as the Bow Valley to the north, and Elkford, B.C. to the southwest, into the proposed project area. In discussing mitigative measures to allow for movement of animals Dr. Paquet said:

> " If you establish a corridor for use by elk, that may not be the corridor that cougars use or the wolves use. Or even some of the rodent species may require corridors. So if you can provide diversity within a golf course, I think you'll have better success in maintaining the integrity of that community... As far as corridor design goes... I think that spreading (the golf course out within the proposed area) and maintaining diversity is the most important design feature."

The Board is in general agreement with Dr. Paquet's views. While the proposed golf course may not obstruct winter movements, it is likely that its active use during summer would displace animals or block their movement. Dr. Paquet's observations did not deal with summer use when golfers are active. However, as noted in Section 9.7.2.3, he found that he could not approach within 200 m of elk in Kananaskis Country. The Board believes that north-south movement could best be maintained by providing a variety of habitat strips within the golf course and enhancement sites along the eastern border of the site. The first of these could be achieved by varying the widths of the uncleared strips between the fairways to a greater extent than is contemplated in the proposed layout. The Board recommends that Fish and Wildlife, in its detailed review of the layout of the golf course, ensure that there is an uncleared strip running in a north-south direction which is as wide as possible, recognizing other existing constraints. The Board is aware that the applicant has been subjected to several such constraints on course layout but it believes that some of these, and particularly the 100 m highway setback, could be applied with some flexibility. With respect to east-west movement along the Evan Thomas Creek floodplain, the Board in Section 9.7.3.1, has suggested a condition it would attach to an approval should one be granted. The condition could lead to relocation of structures proposed for the north side of the creek and improve the prospects for continued use of the corridor.

9.7.5 Critical Wildlife Zone 2

Kan-Alta stated that most of the proposed golf course development would be confined to an area designated for the development of facilities (Zone 8) in the Kananaskis IRP. Golf course development in Zone 8 is compatible with the objectives of the IRP. However, the proposed course design would also see the development of fairways 15 and 16 and part of fairway 17 within the Critical Wildlife Zone (Zone 2). Kan-Alta indicated that the golf course service road would be placed to the west of fairways 15 and 16 to avoid further intrusion into Zone 2. The design also calls for rerouting the existing Wedge Pond Connector trail to the east of the golf course. The trail would be roughly 200 m into Zone 2 for much of its length.

The applicant suggested that although intensive recreational development such as the proposed golf course is incompatible with the objectives of Zone 2, the zoning provisions of the IRP were intended only as a guide to development and do not have legal status. By building in Zone 2, the applicant would take advantage of the aesthetics of a greater change in elevation than is available elsewhere on the proposed lease site. Kan-Alta also argued that the layout of the course would be too crowded if it were confined to the Facility Zone (Zone 8). It was the position of the applicant that wide buffer strips between fairways would be aesthetically pleasing and would benefit some smaller species of wildlife that would use the strips for cover. Although the use of wide buffers would spread the course over a greater area including part of the Critical Wildlife Zone, the net benefit to wildlife of leaving wider cover strips between fairways would outweigh the costs of habitat loss in Zone 2. The two habitat types that would be lost would be lodgepole pine and lodgepole pine-aspen, both abundant in the area. The applicant expressed the opinion that the areas affected do not provide high quality habitat for species other than hare and red-squirrel.

Interveners stated that intensive recreational development is listed as an incompatible activity for lands designated as Critical Wildlife Zone 2 and that management guidelines for Zone 2 specify that no new trails will be developed. They agreed with the applicant that zoning under the IRP has no legal status, and is therefore intended to serve as a guide only. However, they felt that Kan-Alta's reasons for wanting to place part of the development in Zone 2 were not sufficient justification for removing part of the Critical Wildlife Zone.

The Sarcee F and G Association suggested that habitat losses that could occur within the Critical Wildlife Zone under the proposed development plan might be more extensive than indicated by the applicant, since a zone of habitat alienation would extend from the golf course and the relocated Wedge Pond connector trail into Zone 2. Its position is that more baseline information is required to enable the Board to evaluate the merits of this and other aspects of the applicant's proposal.

The Board did not find the information presented by the applicant and the various interveners particularly useful in evaluating the acceptability of placing a portion of the proposed development within Zone 2. The applicant's reason for planning a portion of the golf course within this Zone is aesthetic. Kan-Alta's opinion that this would not significantly affect wildlife was subjective and not based on surveys of wildlife use. The applicant did not provide the Board with a clear understanding of why the present boundary line was agreed to and what the consequences would be of changing the zoning. Some interveners were opposed to the proposed use of Zone 2 on the grounds that it would contravene guidelines set out in the Eastern Slopes Policy and the IRP. However, they did not provide specific reasons why such construction should be opposed.

The only evidence before the Board that relates directly to the intent of the Critical Wildlife Zone is the IRP which established the current zoning and outlines the management guidelines that apply to various land-use zones within the Kananaskis/Spray Resource Management Area. From the IRP, it is clear to the Board that the intent of this particular Critical Wildlife Zone is protection of habitat for elk, bighorn sheep and mountain goats within the Wedge-Evan Thomas Creek area, which is identified as one of the three "most critical wildlife wintering areas in the Eastern Slopes". The IRP does not specify the factors that were considered in establishing the boundary of this critical wildlife area although it notes that the plan is based on resource information that was available when the plan was prepared. Zoning boundaries contained in the IRP reflect a refinement of zoning provided in early provincial planning or policy documents. The plan states that "While the Kananaskis Country Integrated Resource Plan is guided by and is consistent with the Eastern Slopes and Kananaskis Country Policies, it supersedes them in terms of providing direction for government management of the planning area at the sub-regional level". The IRP also refers to the Critical Wildlife Zone in a discussion of the implications of the plan for resources and resource uses within the planning area:

> "Revisions and refinements to the Critical Wildlife Zone to conform more closely to critical areas should ensure the achievement of fisheries and wildlife objectives. At the same time this may restrict other users. For example, the Critical Wildlife Zones on the Wind-Pigeon and Evan Thomas areas in Resource Management Area A limit the types and amounts of recreational development which can be considered and the Zone 2 on the Highwood Junction area restricts domestic grazing."

Kan-Alta suggested that the habitat in Zone 2 that would be directly affected is not very productive for elk, bighorn sheep or goats. In the Board's opinion, the habitats that are being protected are probably alpine ranges in the case of sheep and goats, and subalpine grasslands on the side of the Wedge that are being used as winter range by elk. To preserve the values of these ranges however, it is necessary to maintain a buffer between them and development in the valley. Building to the edge of the Critical Wildlife Zone would undoubtedly create a zone of habitat alienation within it but, from a practical standpoint, protection of these critical ranges probably does not hinge on whether development would occur to the edge of the Critical Wildlife Zone or extend 200 m into it. Should the project be approved, the Board would be willing to accept the proposed encroachment on the Critical Wildlife Zone, particularly because such encroachment would permit the maintenance of greater habitat diversity throughout the proposed golf course.

9.7.6 Cumulative Effects

The cumulative effects on wildlife development in Kananaskis Country, and in the montane ecosystem of the southern Rocky Mountains in general, were of concern to participants. There is particular concern for species such as grizzly bear, cougar and wolverine that are already at risk and that require extensive tracts of wilderness habitat to maintain viable populations. There is also a concern for elk and other ungulate species that undergo extensive seasonal movements between portions of their home range. To fully evaluate the possible consequences of proposed new development it is necessary to consider the extent to which the ecosystem, including wildlife populations and habitats, has been affected by previous development within the Kananaskis Region, and its capacity to withstand further impacts.

Kan-Alta calculated habitat losses within a 12,700 ha area extending along the Kananaskis Valley from the south end of Barrier Lake to the south end of Wedge Mountain, and to the lower limit of the alpine ecoregion on either side of the valley. Within this area, habitat losses resulting from clearing for existing developments were estimated to be 897 ha, or seven percent of the study area. Developments that were included in this estimate are the Nakiska Ski Hill, the Kananaskis Golf Course, Kananaskis Village, the Mount Kidd Recreational Vehicle Park, Highway 40, a transmission line right-of-way, a gravel pit, and the wildlife enhancement areas.

Habitat alienation was estimated based on an assumption that the zone of alienation would extend up to 500 m in the case of ungulates and up to 200 m in the case of other species such as hare, red squirrel and bear. The maximum displacement distance was assumed to be 200 m along the highway, and habitat alienation was not calculated for the gravel pit and transmission line, since it was assumed that these areas could be reclaimed to provide attractive habitat. As a result of these calculations, the applicant estimated that the amount of habitat that might have been lost through alienation from existing developments in this region was 983 ha (eight percent of the study area) for species displaced 200 m from disturbance, and 1109 ha (nine percent of the study area) in the case of ungulates. The applicant also estimated that the proposed Evan Thomas Creek development would remove a further 323 ha (three percent of the study area) through clearing and habitat alienation.

The Sarcee F and G Association pointed out the importance of the Kananaskis valley bottom as year-round habitat for wildlife and as a wildlife movement corridor. It indicated that, at certain times of the year, valley bottoms provide a greater availability of food, cover and shelter than higher areas. It also suggested that, despite the degree of disturbance, "the lease region apparently still serves as an important movement corridor between the Wind Valley and the Evan Thomas critical wildlife regions". Maps were used to support the argument that much of the valley bottom has already been impacted in a way that restricts movement of wildlife. The Sarcee F and G Association expressed concern that "when a zone of alienation is added to the development area outlined on the map, the proposed development appears to block access to the Wedge". The Association pointed out, and Kan-Alta agreed, that effects on regional wildlife populations of disrupting movement corridors are unknown and suggested that sites of high ungulate road kills are related to attempts by ungulates to avoid areas of development as they move along the valley.

Dr. Paquet pointed out that cumulative effects are not simply a matter of habitat loss or alienation. Habitat fragmentation is also important as is the need to maintain free movement of animals between areas of good habitat. Dr. Paquet also suggested that an understanding of the ecology of the larger animal species required study of a much larger area than that which would be occupied by the proposed project. He cited, for example, the area of his wolf study which extends: "... to the east side of Glacier National Park in the United States, as far west as Sandpoint, Idaho, as far north as the boundary of Jasper and Banff.. in Alberta as far east as Bragg Creek and as far west as the Columbia Basin". Dr. Paquet suggested that it should not be the responsibility of the applicant to study such a large area, but that the Board should take into account the dynamics of development in an appropriately large region.

The Board agrees that management of the southern Rocky Mountain ecosystem and, in particular, of the large animal species which form a part of it, requires attention to the entire area and the participation of the several agencies that have jurisdiction within the area. The Board is aware that although the proposed golf course would occupy only a small part of the area, it represents a disturbance that is added to many others that have already occurred. An integrated approach would be desirable to determining how much disturbance can be sustained by the regional ecosystem before unacceptable impacts occur. Without it, there is risk that the biological resources which attract people to the area will be nibbled away until the attractiveness is lost.

9.7.7 Summary of Views of the Board Regarding Wildlife

The Board has reviewed all of the evidence before it about the possible effects of the proposed project on wildlife. While the Board recognizes that there is insufficient information to make accurate quantitative estimates of effects, the Board has been able to make qualitative assessments of some potential impacts and to define the uncertainty of others. The Board has developed recommendations and conditions to manage uncertainty, particularly in relation to the development and application of mitigation and enhancement measures. These stipulations would apply if the project is approved.

In its review, the Board considered potential direct effects on the death rate of animals, possible effects on animal populations of habitat loss, alteration and alienation, and the possible additive or synergistic effect that the proposed project might have on the cumulative effects of development in the region. The Board also considered measures to avoid, mitigate or compensate for potential impacts and the problem of managing cumulative effects on a regional basis. The results of the Board's review are summarized in the following.

Although there would be direct losses to wildlife populations and indirect losses through habitat loss, alteration and alienation, the Board concludes that these would not reach unacceptable levels provided the following actions were taken:

- Wildlife deaths arising from construction may be reduced by scheduling activities to certain parts of the year. The Board would recommend that Kan-Alta adhere to the constraints on scheduling identified in its application.

- In order to reduce road kills, the Board would recommend that KCIC and Fish and Wildlife review the frequency and location of road kills during the three years that would follow construction of the project and, at the end of that period, erect animal crossing signs and/or reduce speed limits at appropriate locations.

- Should the proposed project proceed, the Board would recommend that KCIC and Fish and Wildlife enlarge the Evan Thomas Creek recreation area to include the entire golf course property and continue the present hunting restrictions in the expanded area.

- The Board would recommend that Kan-Alta carefully implement its proposed measures to control garbage and odours on the project site in order to avoid attracting bears.

While the Board has some reservations about the unproven effectiveness of mitigation and enhancement measures, it does not believe that the proposed project should be allowed to proceed without a mitigation and enhancement plan, reviewed and approved by Fish and Wildlife. This could be accomplished, as Kan-Alta proposed, in conjunction with the issuance of the development agreement. The Board would recommend that the plan include the following elements:

- Information gathering and analysis necessary to design an appropriate mitigation/enhancement program;

- A program of monitoring animal use of the proposed golf course and existing and proposed enhancement areas to determine whether the methods adopted have been effective. This should be done in conjunction with Fish and Wildlife;
- Measures to conserve or improve the value of the existing ungulate enhancement area;
- Measures to enhance ungulate habitat to the east of the proposed project area;
- Measures suggested by the applicant with respect to waterfowl habitat, if considered appropriate by Fish and Wildlife; and
- Measures to avoid or mitigate impact on rare species of amphibians, reptiles, birds and mammals should any be found to reside on site.

With respect to the existing enhancement area, on which the proposed project would encroach, the Board would require that construction of facilities on the north side of Evan Thomas Creek not proceed until Kan-Alta has reviewed their specific locations with Fish and Wildlife and they have been approved by that Division.

With respect to the north-south movement of animals through the proposed project area, the Board would recommend that Kan-Alta vary its proposed layout so that at least one uncleared strip between fairways running in a north-south direction be as wide as possible and that the detailed course layout be reviewed and approved by Fish and Wildlife before the issuance of a development permit.

The Board reviewed Kan-Alta's proposal to infringe on the area designated as a Critical Wildlife Zone in the Kananaskis IRP and concludes that the infringement would be acceptable as proposed.

The Board has considered the matter of cumulative effects of all developments on the regional ecosystem and has concluded that an integrated approach would be desirable to determining how much disturbance the regional ecosystem could sustain before unacceptable impacts would occur. It notes that Kan-Alta said it would be prepared to participate in such an approach. The Board intends to pursue the matter of an integrated approach to effects on the regional ecosystem with the relevant government departments and others with potential interest in the matter.

10.0 SOCIO-ECONOMIC EFFECTS OF THE PROPOSED PROJECT

10.1 Visual Resources

References to the beauty of the proposed site were made by a number of participants including the applicant, the Stoney Tribe, Trout Unlimited, and the Sarcee F and G Association. The applicant indicated that the site's setting was one of the primary factors which would determine the success of the project. Evidence by the Stoney Tribe indicated an instinctive appreciation of the site's beauty. The Sarcee F and G Association suggested that there are a number of other golf courses planned for the area, many of which have equally beautiful settings and fewer environmental impacts. Trout Unlimited pointed out that anglers, like golfers, appreciate the beauty of the area but that, whereas there are many potential sites for a golf course, there are only a limited number of trout streams.

There is no question that the area proposed for the golf course is attractive from an aesthetic viewpoint. Indeed, that is a key reason for wanting to locate the course in that area. In the Board's judgement, construction of an additional 18-hole golf course facility, as proposed, will not represent a further significant impact on the visual attractiveness of the region. Thus, there is no reason to turn down the application because of negative impacts on visual resources.

Given that the proposed golf course would accommodate golfers that apparently cannot be accommodated at the existing course, more people will be able to enjoy the beauty of the area while playing golf. This enjoyment by greater numbers of golfers may be offset somewhat by a reduced number of other recreational users enjoying the beautiful setting of the area.

10.2 Recreational Use of the Area

10.2.1 Hunting and Fishing

Both Trout Unlimited and the Sarcee F and G Association were concerned that the development would negatively affect hunting and fishing opportunities. Data on current use of the lease area for hunting and fishing and the potential for loss of such activities were not provided by Kan-Alta.

Given the likelihood that most anglers would enter the stream from the bridge on Highway 40 and walk upstream, Trout Unlimited estimated that development of the proposed golf course would result in the loss of two km of stream out of a possible total of four km. Whatever the actual potential for losses, Trout Unlimited suggested that it is important to consider the cumulative impacts spatially and over time, stating that fisheries resources have already been severely degraded due to past developments and, in addition to potential losses from Kan-Alta's proposal, angling opportunities may be further impacted by future developments. Although Trout Unlimited acknowledged that fishing would still be possible at Wedge Pond, it suggested that this does not offer the same experience as a naturally reproducing fishery.

Both Mr. Hermiston and Mr. Faubert were of the view that the fishing in Evan Thomas Creek is of poor quality, particularly given that a portion of the stream is dry for part of the year, and that potential losses of recreational fishing would not be significant.

The Sarcee F and G Association estimated the extent of hunting in the area to be 2,200 day users in 1990-91. Hunting is concentrated in the fall, whereas non-consumptive activities are heaviest in the spring, summer and winter. The Sarcee F and G Association stated that, if the proposal results in significant reduction of regional wildlife carrying capacity, the entire hunting benefit from the lease area would be lost.

Currently, no hunting is allowed in the Evan Thomas Recreational Area, which covers part of the proposed project area. The Sarcee F and G Association concurred with Kan-Alta that if the proposal goes ahead, the recreational area should be expanded.

With respect to fishing, information provided at the hearing raises considerable doubt as to the quality of fishing in Evan Thomas Creek in the area of the proposed golf course. The Board accepts that part of the reason for the low quality of fishing is probably related to human activities, but the fact is, for whatever reason, the current fishing opportunities in the immediate vicinity of the proposed golf course are not great.

The Board recognizes that restrictions at the proposed golf course would further limit the use of part of the area to recreation anglers. However, fishing would continue to be possible in the upper portions of Evan Thomas Creek, where the quality is reportedly better. Having this in mind, the Board does not believe that the degree to which the proposed golf course would restrict recreational use of the area by anglers is significant enough to cause it to deny the application.

In terms of hunting, the Board recognizes that there has been considerable recreational use of the area for that purpose. The number of such users would be considerably less than could be expected to enjoy the area by golfing at the proposed project. Also, the use of the area by hunters cannot be considered as an activity that contributes to the attractiveness of the area, either to other users or wildlife. The Board therefore concludes that a reduction in hunting opportunities is not an adequate reason to consider turning down the application.

Hunting is already restricted in the portion of the area currently most used by golfers and for other forms of recreation. If the proposed Kan-Alta development proceeds, the restricted area should be expanded. The Board would make such a recommendation to Fish and Wildlife as indicated in Section 9.7.

10.2.2 Hiking, Skiing, Horseback Riding and Other Recreational Uses

Both the Federation and the Sarcee F and G Association expressed concern about the potential effect of the proposed golf course on hiking and cross-country skiing trails. According to statistics provided by the Association, in 1990-91 approximately 70,000 people used the Evan Thomas Creek and Wedge Pond day-use areas for a variety of recreational activities. The Sarcee F and G Association expects that a large number of the 70,000 were trail users; hikers, skiers, mountain bikers, and walkers.

Development of the proposed golf course would require that the existing Evan Thomas Creek and Wedge Pond Trails be rerouted. The Sarcee F and G Association was concerned that the rerouted trails would be steeper (with slopes of 13 percent to 50 percent) than those currently in place, making them less accessible to seniors, those whose mobility is impaired and cross-country skiers.

Kan-Alta stated that the proposed facility would not interfere with access to the wilderness country to the east of the property, where it believes that most of the recreational activity in the area takes place, and that the proposed project would actually increase public access to the course site. Kan-Alta indicated that the new route for the Wedge Pond Trail has not been finalized; its location would be determined in conjunction with KCIC. Thus, it is not yet known what its slopes would be. Rerouting of the trail to the north of the property is relatively firm, but Kan-Alta stated that it would likely be no steeper than the original route and that those affected by the greater steepness of the Wedge Pond Trail could use the Evan Thomas Creek Trail to get to the same location. Kan-Alta further noted that cross-country skiing would be allowed on the property in winter, potentially subject to restrictions to encourage wildlife to use the area, and that a walking trail and viewing area would be constructed at the north end of the property, thus potentially increasing opportunities for these activities in the area.

With respect to horseback riding, the existing equestrian parking lot would remain and Kan-Alta would run an equestrian trail to the north end of the property. These plans have been developed in conjunction with KCIC.

The construction of the proposed golf course would restrict some recreational use of part of the area and would cause the rerouting of portions of certain trails. The Board accepts Kan-Alta's evidence that such rerouting can be done in a manner which would minimize negative impacts and possibly enhance recreational use opportunities for certain groups in certain areas at certain times of the year. The Board recommends, if the project proceeds, that KCIC work with the applicant to ensure the minimization of any negative affects on general recreational use of the area.

10.3 Historical and Archaeological Resources

Kan-Alta stated that there is a low probability of encountering palaeontological sites in constructing the golf course and that Alberta Culture and Multiculturalism agrees with this assessment. Historical resource studies have not been done for the Evan Thomas Creek area but, because the area was not of great importance for coal mining and logging, it is thought to be unlikely to contain major sites within the "resource development" theme identified by Alberta Culture and Multiculturalism. Kan-Alta stated that prehistoric resource potential, dating back to as early as 12,000-11,000 years ago, is high and that prehistoric sites can be expected anywhere within the development area.

Based on these conclusions, Kan-Alta stated that prehistoric sites would be the focus of the Historical Resources Impact Assessment which has been requested by Alberta Culture and Multiculturalism, although palaeontological and historic sites would be recorded if found. In doing this assessment, Kan-Alta indicated that it would follow the requests made by Alberta Culture and Multiculturalism.

The survey program would begin once the centreline of the various disturbed areas was identified. Standard surficial inspection and shovel hole testing would be used to identify historic and recent sites whereas backhoe testing would be required for identifying ancient, deeply buried sites. Kan-Alta stated that, if necessary, the company would have an observer on site to determine whether or not there were any significant artifacts unearthed.

If materials were found, Kan-Alta indicated that work would be stopped and measures taken to preserve and collect the material. Kan-Alta stated that the "importance" of the material would be determined by interested parties, which in turn would be identified by the team doing the survey. A specific mitigation program would be developed after prehistoric and historic sites were identified and assessed.

The Board notes that the Department of Culture and Multiculturalism would be involved in any assessment of historical resources and would provide direction. The Board recommends that Kan-Alta adhere to the direction from the department, and on that basis is satisfied that any potential effects on historical or archaeological resources would be manageable.

10.4 Economic Effects

Kan-Alta stated that construction of the proposed golf course would result in capital expenditures of at least $6.5 million and that the use of provincial goods, services, and labour for most of the construction and operation of the project would be maximized. Up to 50 people would be employed during construction. Operations staff would total some 75 on a seasonal basis, with a payroll in excess of $1.0 million per year and operating expenses of $2.4 million per year. Kan-Alta said that further economic benefits associated with the project would include the generation of $100,000 per year of public revenue from land lease costs and municipal taxes.

Kan-Alta also stated that the proposed course would satisfy some of the existing excess demand for world class golf in the Kananaskis area, and estimated that the increase in golfing activity would result in increased direct expenditures by tourists within Alberta of $4.5 million per year.

Mr. Hermiston and Mr. Faubert indicated that the current inability of some hotel guests to get tee times was hurting local business and that the proposed project would increase tourism in the area, to the benefit of both local businesses and the province as a whole. The need for a broader tax base in the area was emphasized by Mr. Faubert who claimed that regional property taxes would continue to increase to offset declining funds available from the Province for maintaining Kananaskis Country.

Mr. Boyd and the Sarcee F and G Association suggested that current uses of the area are more valuable than the proposed use. An analysis by the Sarcee F and G Association concluded that not only would the proposed project be economically unfeasible from a private perspective if use or golfer expenditures declined by 12 percent from those estimated, but that its social costs would likely far outweigh its social benefits. The Association disputed the estimate provided by Kan-Alta of the increase in tourism expenditure as a result of the proposed project, noting that the estimate of $4.5 million likely double-counted the spending associated with playing golf. It suggested that the current users of the Evan Thomas Creek and Wedge Pond day-use areas spent roughly $2.6 million per year related to their activities of which hunters spent about $100,000.

Trout Unlimited and the Sarcee F and G Association both contended that development of the proposed project would reallocate to a single user group, without significant investment, a public resource which is currently available to all Albertans.

The proposed golf course is not a large project in terms of economic impacts. The Board expects it would result in expenditures for goods and employment of at least $5 million in Alberta during construction, and about $2.4 million annually as a result of operations. The latter would include seasonal work for about 75 persons, and this would be beneficial to the province and area, recognizing the current high rates of unemployment.

The additional golf that could be accommodated by the proposed course would also contribute to the income of the region, but some portion of these expenditures may well have been otherwise spent in the province in any case. Recognizing that the other recreational uses of the area would not be seriously affected, the additional expenditures of golfers would likely more than offset any reduced expenditures from these other users.

The Board has reviewed the information submitted by the Sarcee F and G Association suggesting that a very small reduction in the number of golfers could cause the proposed project to be uneconomic. The Board, on the basis of the applicant's submission, understands there is currently considerable demand for golf in Kananaskis Country, and expects it will continue in future. Also, even though the proposed project would be financially sensitive to the degree of use of the golf course, the Board is confident that it would not proceed, even if approval is given, unless the applicant's studies indicate an ongoing demand for golf in the area.

All things considered, the Board sees an economic benefit to the area and province if the proposed project proceeds.

10.5 Need for Municipal and Other Services

10.5.1 Sewage

According to the applicant, the Evan Thomas Sewage Treatment Plant will have to be upgraded whether or not the proposed project proceeds. A recent report done for Alberta Public Works Supply and Services estimates the cost of upgrading to meet existing requirements would be $462,000 (in 1990 dollars). An additional $421,000 would be required to meet the additional demand associated with "probable" developments, in which an 18-hole golf course and various types of staff housing are included. Based on the report's estimates, if a one-to-one ratio is assumed for sewage flows to cost of upgrading, 26 percent of these costs would be attributable to the golf course.

Kan-Alta stated that the estimates of the golf course sewage flows in the report are too high, by 30-35 percent, and that the amount of the upgrading attributable to the golf course would be about 20 percent. If additional staff housing were required, this would increase the 20 percent figure slightly; however, Kan-Alta did not consider that housing requirements would be significant.

The Sarcee F and G Association estimated that the Kan-Alta project would account for just under 50 percent of the costs of upgrading the sewage plant to accommodate probable developments. Its estimate included the golf course plus provision of staff housing. The Association was also concerned that provincial residents are already subsidizing regional utilities to a significant extent. In response to this concern, Mr. Faubert suggested that this is not inappropriate given that users of Kananaskis Country are mostly day users who do not pay to use the area or the utilities.

The Board recognizes that an expansion to the regional sewage facility will be required in any case. The size of the expansion can therefore be increased to efficiently accommodate the needs of the proposed golf course and club house and any other related facilities. If the Kan-Alta project proceeds, the Board recommends that KCIC officials ensure that the arrangements with Kan-Alta to pay for the additional sewage capacity are fair to all parties, including the general public in the province.

10.5.2 Housing

Kan-Alta said that it expects an operating staff of approximately 75 people. Based on experience at the existing golf course, it is expected that 20-25 percent of staff would commute from nearby locations. Kan-Alta indicated that it is in its interests to hire locally to the greatest possible extent both to reduce "cabin fever" and to minimize the need for staff housing.

Kan-Alta indicated that due to planning uncertainties and constantly changing demand for existing housing, as well as Kan-Alta's wish not to over-build, it had no specific plans regarding on-site accommodation. Kan-Alta stated that it would determine the need for and timing of additional housing when the construction schedule for the proposed golf course was finalized. Application for additional housing would be made to KCIC at that time. Kan-Alta would bear all associated costs but because staff housing would generate revenues, the need to provide additional accommodation would not affect the financial viability of the proposed golf course.

Kan-Alta indicated that existing housing would accommodate one-third of the projected staff. If housing additions were required, they would take place only in areas already designated for such development. Because existing utilities have been designed to allow for such expansions (with the exception of the sewage treatment plant), it is Kan-Alta's view that additions to housing would have a minimal impact on utility infrastructure.

The Sarcee F and G Association expressed concern that Kan-Alta did not adequately address the question of staff housing. If additional housing were required, it would add to the environmental impacts and, the Association felt, should be considered in order to determine the cumulative impacts of the development.

The Board is satisfied with Kan-Alta's plans regarding housing for staff. If the proposed project proceeds and additional staff housing is needed and constructed, the Board recommends that financial arrangements be such that they are fair to all involved parties, including the general public.

10.6 Effects on the Stoney Tribe

10.6.1 Views of the Participants

In its written submission, the Stoney Tribe claimed that an approval of the proposed Kan-Alta project ought to provide specifically for the Stoney Tribe as a special population group which "will be significantly affected by the proposed development, socially, economically and culturally".

The Stoney Tribe advocated mitigation of its losses, if the application were to be approved, by conditioning any approval so that Kan-Alta be required to enter into an agreement with the Stoney Tribe committing:

- to hire Stoney members in all phases of the development and have Stoney members on payroll at any time;
- to obtain natural resources, such as gravel, sand and topsoil from the Stoney Reserve, as well as sawmill products such as rough timbers for cribbing;
- to require bids awarded to contractors to show that a minimum number of Stoney band members would be employed;
- to give employment priority to Stoney Tribe members who are qualified or who indicate willingness to be trained for the positions advertised;
- to utilize the human resource facilities of the Stoney Tribal Administration in posting employment opportunities with the proposed development, in screening potential applicants and in implementing training programs for Stoney members and others, the price for such service to be negotiated by Kan-Alta and the Stoney Tribe;
- to develop cross-marketing opportunities with Stoney businesses, such as Nakoda Lodge Ltd. and Chiniki Restaurant;
- to set aside an area at the proposed resort to promote Stoney culture and the historical significance of the area as it pertains to the Stoney people;
- to use Stoney names where possible in the development;
- to identify business opportunities on the Kan-Alta site that would be available to the Stoney Tribe, more specifically, a gift shop;
- to establish a Stoney cultural information centre on the site of the proposed development in recognition of the importance of the area as a traditional Stoney site, to be managed by the Stoney Tribe at Kan-Alta's expense and to display, among other things, any artifacts that may be uncovered at the site during the construction phase; and
- to compensate the Stoney Tribe for the loss of the Evan Thomas Creek hunting area and for the reduction in elk and other ungulates hunted for food in the area by Stoney members.

Kan-Alta indicated that it is prepared to consider a number of the requests made by the Stoney Tribe such as using topsoil from the Reserve, if it is suitable, promoting cross-marketing opportunities, establishing a cultural information centre, and using Stoney place names for golf holes or places on the golf course. In addition, Kan-Alta stated that it is prepared to hire Stoney members and to work with the Tribe's economic development department to provide employment training. However, Kan-Alta was opposed to a quota approach to employment of Stoneys or to imposition of any of the Stoney's requests as conditions to any approval. Indeed, Kan-Alta argued that the Board did not have jurisdiction to impose such conditions, and pointed to a case involving the Athabasca Tribal Association where the Courts had ruled that the Energy Resources Conservation Board (ERCB) did not have jurisdiction to include an affirmative action condition in an approval.

Kan-Alta suggested that any contractual rights of the Stoney Tribe to the area are limited to those attached to Mr. Lazarus Wesley's trapline, which encompasses the majority of the lease area, but noted that Mr. Wesley has not formally registered his use of the trapline since 1981. Mr. Wesley indicated that it has been used continually by other Stoney members, consistent with Mr. Wesley's cultural authority as the designated holder of the trapline to grant such permission.

In response to the argument by the applicant that the NRCB did not have jurisdiction to impose the requested conditions, the Stoney Tribe contended that the responsibilities of the NRCB were more specific than the ERCB with respect to the social effects of proposed projects. It argued that the Tribe is a special population group within the Board's authority and that "...the Stoney's right to the natural resources of the Evan Thomas Creek area are being affected". The Stoney Tribe claimed that jurisdiction does exist for the NRCB to condition any approval issued in the manner requested by the Tribe.

10.6.2 Views of the Board

The Board does not believe that the use of the area by the Stoney Tribe would be substantially altered from what is currently possible recognizing the existence of golf and other facilities in the area.

With respect to the conditions requested by the Stoney Tribe, the Board believes it has jurisdiction to include in an approval, conditions related to social, economic or environmental matters if they are necessary to ensure the proposed project is in the public interest. In the subject case, the Board has assessed the various effects of the project to determine if it is in the public interest. As it relates to the Stoney Tribe, although the Board supports the overall intent of the requested conditions, it is not able to conclude that the absence of such conditions would mean the project was not in the public interest. It therefore doubts that it has the jurisdiction to include them as requested.

The Board notes that Kan-Alta expressed the view that it is willing to work with the Stoney Tribe to ensure that the project provides employment and business opportunities and minimizes negative cultural or other effects. The Board is very supportive of this approach and believes that arrangements such as those reflected in the conditions requested by the Stoney Tribe may be more effective when negotiated directly between parties than when imposed by some outside party. If the project goes forward, the Board would recommend that Kan-Alta work with the Administration of the Stoney Tribe towards optimizing benefits to the Tribe. Information was provided to the applicant at the hearing regarding the type and timing of contacts that would be appropriate.

Regarding Mr. Lazarus Wesley's trap line, the Board believes the matter of compensation is an issue to be directly settled by Mr. Wesley and Kan-Alta. If agreement cannot be reached, the Board understands that there is a Trapper's Compensation Board established by the Government of Alberta which may be able to assist with the dispute.

10.7 Overall Conclusions of the Board Regarding Socio-Economic Effects of the Proposed Project

The proposed project is not a major one and would be located in an area where two other golf courses already exist. Since the new golf course is proposed by the operator of the existing courses, it would have certain advantages in terms of sharing staff and services and in operating experience. There would likely be limited negative impacts on other recreational users of the area, but numerically at least, these would probably be more than offset by the number of golfers enjoying the attractive area.

The economic effects would not be great, on a provincial basis, but would be beneficial in that they could provide increased employment and expenditures for goods and services, particularly in the immediate region. Any required municipal or other services could be reasonably handled.

The proposed project might have some minor negative effects on the use of the area by the Stoney Tribe, but these could be offset by potential economic benefits.

Having regard for all of these matters, the Board does not see significant negative social effects resulting from the proposed project, and sees significant economic benefits to the region, and to a lesser extent, to the province as a whole.

11.0 OVERALL BOARD CONCLUSIONS RESPECTING THE PUBLIC INTEREST OF THE PROPOSED PROJECT

The conclusions set out in this section of the report result from a consideration of all of the information placed before the Board. Sections 9 and 10 deal with the environmental and socio-economic issues in detail. This section summarizes the conclusions from these two and earlier relevant sections and provides the Board's overall conclusions with respect to Kan-Alta's application to construct an 18-hole golf course in the Evan Thomas Creek area of Kananaskis Country.

The Board considers that the demand to play golf in Kananaskis Country is sufficient to justify proceeding with the proposed course provided it could be built and operated in a manner that would be in the public interest. The location of the proposed course is reasonable and generally consistent with the regional land-use plans. Additionally, the Board concludes that Kan-Alta is capable of successfully implementing its plans for the golf course.

The Board is satisfied that the withdrawals of water for irrigation would not have a significant effect on Evan Thomas Creek. It is also satisfied with Kan-Alta's plans to use groundwater for domestic purposes.

The Board's assessment of the proposed construction techniques leads it to conclude that some tees and greens in the flood plain would be acceptable if they are elevated, underlayed with impermeable barriers and properly armoured. The Board would condition any approval to ensure that these steps are taken. Additionally, there would be a need for a buffer zone along Evan Thomas Creek, and it should be a minimum of 30 m unless Fish and Wildlife has approved a lesser buffer in a particular situation. Clearing of vegetation along streams for golf fairway crossings should also be minimized to the extent practical. These measures, coupled with the proposed program for applying chemicals to the course, satisfy the Board with respect to possible contamination of the Creek.

The Board is satisfied with Kan-Alta's plans regarding the disposal of sewage effluent. It is also satisfied with Kan-Alta's response to the possibilities of channel migration or debris flow in Evan Thomas Creek.

With respect to possible effects on aquatic life, the Board is generally satisfied with the measures proposed by Kan-Alta to schedule construction around fish spawning periods and to address potential siltation problems. To avoid such problems, the Board would require Kan-Alta to provide an orientation program for construction workers and to sod areas of graded soil within five metres of the creek within five days of the completion of earth movement and compaction.

The Board agrees with the measures proposed by Kan-Alta to minimize loss of riparian habitat for aquatic life, but special efforts would be needed to ensure that they are effective.

A review of the evidence with respect to vegetation leads the Board to conclude that there would not be sufficient clearing of any one vegetation type to threaten its continued existence in the region. Further surveys are needed to minimize any possible impacts on rare plant species.

The Board has concluded that even though data on wildlife is somewhat limited, sufficient information is available to allow it to make a decision. With respect to possible wildlife mortality as a result of the proposed project, the Board believes that impacts during construction could be minimized by careful scheduling, and hunting pressures could be relieved by expanding the restricted hunting area. Road kills due to increased traffic could be reduced by warning signs and lower speed limits. There would be increased animal/human conflicts which would probably require relocation of a few animals, but these would not be so serious as to cause the application to be denied.

The Board recognizes that some wildlife habitat would be removed or otherwise altered by the proposed project, but believes that careful construction practices and the provision of adequate buffer strips would reduce the impact on habitat to an acceptable level. The loss of habitat and habitat alienation would reduce the number of animals using the area. It is not possible to accurately quantify what those reductions might be, but with effective mitigation, the Board believes the regional population of elk and other ungulate species would not be threatened. The Board accepts that there would be a reduction in the use of the area by large carnivores, even with mitigative measures, but does not believe that impact would be sufficient to justify denial of the proposed project.

The Board has reviewed all of the evidence respecting the possible impact of the project on the existing wildlife enhancement site in the area as well as Kan-Alta's plans for further habitat enhancement. The Board is satisfied that adequate habitat enhancement can be developed, and would condition any approval to require the preparation of a comprehensive mitigation and enhancement plan satisfactory to Fish and Wildlife.

With respect to wildlife corridors, the Board believes that at least one uncleared strip between fairways on the golf course should be as wide as possible to provide for proper north-south movement. With respect to east-west movement, the Board would condition any approval to require the applicant to review in detail, with Fish and Wildlife, the possibility of relocating certain facilities on the north side of the creek.

The proposed project is generally consistent with land use planning in the area but does encroach somewhat on the Critical Wildlife Zone. The Board is willing to accept such encroachment because it would permit the maintenance of greater habitat diversity throughout the proposed golf course.

The Board heard from a number of parties on the need for an integrated approach to considering the cumulative effects of all developments on the regional eco-system. The Board agrees that such an approach would be desirable and intends to review the matter further with relevant government departments.

With respect to socio-economic matters, the Board does not believe there would be serious negative impacts on other recreational users of the area as a result of the proposed golf course. Additionally, it is satisfied with Kan-Alta's plans regarding protection for historical and archaeological resources.

The project would result in an economic benefit to the area and the province and would not create significant social problems. It would provide employment and business opportunities. The Board is very supportive of Kan-Alta's expressed willingness to work with the Stoney Tribe to ensure that the potential benefits of the project to that special population group are optimized.

Having regard for all relevant issues, the Board concludes that the proposed golf course is in the public interest. It has made a number of recommendations, primarily to Alberta Environment and the Fish and Wildlife Division of Alberta Forestry Lands and Wildlife, to assist in ensuring that effects on the environment would not be unacceptable. Appendix B contains a summary listing of those recommendations.

12.0 DECISION

Having concluded that the proposed project is in the public interest, the Board is prepared to approve the application of Kan-Alta Golf Management Ltd. to construct an 18-hole golf course facility in the Evan Thomas Creek area of Kananaskis Country, subject to certain conditions and the receipt of the necessary authorization from the Lieutenant Governor in Council. The approval would be in the form shown in Appendix C.

In addition to those conditions contained in the draft approval, the Board would expect Kan-Alta to discharge all of the commitments and undertakings given in the application and at the hearing.

DATED at Calgary, Alberta on August 18, 1992.

NATURAL RESOURCES CONSERVATION BOARD

GJ DeSorcy

G. J. DeSorcy
Chairman

G. A. Yarranton
Vice Chairman

CH Weir

C. H. Weir
Board Member

D. M. Derworiz
Acting Board Member

APPENDIX A

Prehearing Meeting Decision Letters

nrcb92.39

A L B E R T A
NRCB
NATURAL RESOURCES
CONSERVATION BOARD

28 April 1992

*To: Participants in Natural Resources Conservation Board
Meeting of 27 April 1992*

The Board held a meeting in Calgary on 27 April 1992 to consider a number of requests to delay the hearing of Application No. 9104 by Kan-Alta Golf Management Ltd. (Kan-Alta). The hearing is scheduled for 2 June 1992 at the Rafter Six Ranch Resort, south of Seebee, Alberta. This letter represents the Board's decision respecting that meeting.

The following parties requested that the hearing be re-scheduled to dates ranging from late summer to late fall, primarily on the basis that sufficient time has not been available to prepare for the hearing.

- Alberta Wilderness Association, Speak Up For Wild Life Foundation, and Mr. R. E. Wolf
- The Federation of Alberta Naturalists
- The Bow Valley Naturalists
- Trout Unlimited Canada and a number of Trout Unlimited Chapters, and the Upper Bow Valley Fish and Game Association
- Alberta Fish and Game Association

The request was opposed by Kan-Alta on the basis that sufficient time has been available and that a delay would significantly affect the applicant and the project.

The following summarizes the situation respecting public knowledge and notice of the proposed project.

- It was discussed as early as 1988 and public meetings and input regarding the environmental impact assessment (EIA) began in November 1990.

...2

640 FIFTH AVENUE S.W.
CALGARY, ALBERTA
CANADA T2P 3G4
PHONE (403) 297 - 8303
FAX (403) 297 - 5270

EDMONTON OFFICE: #700 - 10339 - 124 STREET,
EDMONTON, ALBERTA T5N 3W1 (403) 422 -1977

- The EIA was submitted to Alberta Environment on 5 November 1991 and the application was submitted to the NRCB on 26 November 1991.
- Supplementary information to complete the application was requested by the NRCB on 6 February 1992 and a response was received on 24 March 1992.
- Preliminary notice of the application was published by the NRCB on 25 February 1992 and copies were sent to all parties who expressed an interest in the matter, including several represented at the 27 April meeting.
- Notice of the hearing, scheduled for 2 June 1992, was issued 7 April 1992, published in the major newspapers and copies were sent to interested parties.

The Board notes that the Natural Resources Conservation Board Act requires that "The Board shall give not less than 30 days' notice of a hearing, ...". The official notice of the Kan-Alta hearing issued after the supplementary information was filed, provides almost double that minimum prescribed period of notice. Additionally, the Board notes from the previously summarized sequence of events that the bulk of the evidence in support of the application was available to interested parties for many months prior to the giving of notice of the hearing. The Board also notes that the project is an important one proposed for a sensitive area,but it is not a mega project, and the application and supporting evidence is not massive.

Having regard for the above and all matters raised at the meeting, the Board concludes that the current schedule will result in "...a reasonable opportunity of reviewing the information relevant to the application..." and "...a reasonable opportunity to furnish evidence relevant to an application...", and that the hearing will provide "...an opportunity to cross examine..." and "...an adequate opportunity of making representations by way of argument to the Board". The Board therefore confirms the date of the hearing of Application No. 9104 as 2 June 1992 at the Rafter Six Ranch Resort.

The Board will deal with those requests for advances of intervener funding received by 29 April 1992, at a meeting at 2:00 P.M. on that date, in Govier Hall of the Energy Resources Building at 640 - 5th Avenue S.W., Calgary.

Yours truly,

G.J. DeSorcy

G. J. DeSorcy
Chairman

ALBERTA
NRCB
NATURAL RESOURCES
CONSERVATION BOARD

May 4, 1992

TO: **Participants in Natural Resources Conservation Board Meeting - April 29, 1992**

The Board held a public meeting in Calgary on April 29, 1992, to consider a number of matters related to intervener funding for the hearing of Application No. 9104 filed by Kan-Alta Golf Management Ltd. (Kan-Alta). This letter represents the Board's decision respecting that meeting.

1. Views of the Participants

Three interveners participated in the meeting; the Federation of Alberta Naturalists, Trout Unlimited Canada and the Sarcee Fish and Game Association. Only two interveners, Trout Unlimited Canada and the Sarcee Fish and Game Association, applied to the Board for an advance award of costs. The Federation of Alberta Naturalists made a submission asking the Board to make a determination as to whether they may be "directly affected" by the project but did not seek an advance award of costs at this time.

The Federation of Alberta Naturalists (the Federation) stated that because of the use of public lands, any development in the area would impact on all Albertans, some more than others. It noted that this area is very different from the land covered by the Three Sisters application to the NRCB as the area is not populated. However, the Federation has several hundred members living in the Bow Valley who use the area and would, it was claimed, be directly affected by any change to the use of these public lands. Specific reference was made to members who had recently used the area for recreational purposes.

Kan-Alta argued that actions that affect access to and frequency of use of public lands are not sufficient to qualify an intervener as directly affected.

Trout Unlimited Canada and a number of Trout Unlimited Chapters (Trout Unlimited) stated that they would be directly affected by the loss of angling opportunities that may result from the construction and maintenance of additional golf facilities within the Evan Thomas Creek watershed. Trout Unlimited submitted that any Albertan who requests recognition as a directly affected individual should be deemed eligible for funding in cases where the proposed project is on public lands.

Trout Unlimited expressed concern about the possible loss of public access to the Evan Thomas Creek fishery, the potential negative impact on fisheries habitat and water quality, increased pressure on sportfishing and possible changes to the existing angling regulations as a result of the development, as well as the deterioration of the angling experience as a result of alterations to the natural environment. Specific reference was made to members who had

*640 FIFTH AVENUE S.W.
CALGARY, ALBERTA
CANADA T2P 3G4
PHONE (403) 297 - 8303
FAX (403) 297 - 5270*

*EDMONTON OFFICE: #700 - 10339 - 124 STREET,
EDMONTON, ALBERTA T5N 3W1 (403) 422 -1977*

recently fished in the area. In addition, Trout Unlimited commented that while there is an abundance of land available in Alberta suitable for the development of golf courses, there are very few trout streams.

Trout Unlimited requested advance funding to hire two experts to present scientific and technical evidence on specific aspects of the proposed project and to hire legal counsel.

Kan-Alta responded that there are no fishing opportunities in the proposed development area and that it has already agreed to maintain full access to the upstream fishing area. It also stated that there would be no adverse effects on fisheries habitat and water quality as a result of the golf course development.

The Sarcee Fish and Game Association (Sarcee F&G Association) stated that its members are regular users of the area for a variety of purposes. Two letters were presented from members expressing concern about the potential disruption of wildlife habitat and the existing environment and the resulting loss of hunting opportunities in the area due to the proposed development. The planned restriction of hunting within and adjacent to the proposed development would affect member access and use of the area. The Sarcee F&G Association requested advance funding to study the value of the proposed site in its present state as compared to its value if it were to be developed as proposed.

Kan-Alta responded that both members of the Sarcee F&G Association who had written letters were residents of Calgary and not the proposed development area and that the Association has had no recent programs or projects within the proposed development area. The applicant stated that interference with hunting, hiking, cross country skiing and mountain biking should not qualify an intervener as being directly affected.

In Kan-Alta's opinion, none of the interveners would be "directly affected" by the proposed development. The applicant stated that an intervention should come from affected individuals rather than groups and that only individuals or groups of individuals could be "directly affected".

Kan-Alta argued that the development area has been zoned for facility development and the area is not a pristine or wilderness area because it already has considerable development, including horseback riding, mountain biking, hiking and cross-country skiing.

Kan-Alta made reference to both the Board's decision report on the Three Sisters Application and the Board's guidelines document. The excerpts referred to from the guidelines were:

- "directly" was intentionally used by the legislators to exclude from consideration for awards of costs the broad public in Alberta who may be affected by any Alberta project but in an indirect manner;

- directly affected individuals or groups of individuals would primarily include those persons who live or work in the vicinity of a proposed project; and

- they might also include individuals or groups who regularly use air, water, land, or living organisms which would be affected by the proposed project and, who as a result, might be exposed to an elevated risk of adverse effects on their bodies and health.

It was the opinion of Kan-Alta that none of the interveners present are or may be directly affected on the basis of these criteria.

The applicant also presented a number of arguments respecting the allocation of intervener funding. Kan-Alta held the view that groups which receive public funds, from any sources including, for example, the Buck for Wildlife Program, should not qualify for intervener funding. It also felt that the groups represented were not in need of advance funding since they had sufficient operating budgets. With regard to the request for funding for legal counsel, Kan-Alta stated funding for legal assistance was not justified as the application is not complicated and the applicant intended to appear at the hearing without the benefit of legal counsel.

2. Eligibility of Interveners for Funding

Three interveners requested determination of their eligibility for funding under section 10(1) of the NRCB Act:

> " Individuals or groups of individuals who, in the opinion of the Board, are or may be directly affected by a reviewable project are eligible for funding under this section."

In reaching its decision on the eligibility of interveners requesting funding to participate in the hearing on the Three Sisters Golf Resort Inc. (Three Sisters) Application, the Board concluded that two questions must be addressed in assessing eligibility. The first is whether those requesting funds are "individuals, or groups of individuals." The second is whether those individuals or groups of individuals "are or may be directly affected" by the proposed project.

In all three requests now before the Board, the Board accepts that the initiative for intervention originated with individuals who believe that they may be affected by the proposed Kan-Alta golf course development and who chose to be represented by the organizations making requests on their behalf. The Board therefore proceeded to assess whether or not these individuals are or may be directly affected by the proposed project.

In its decision respecting those seeking funds to intervene in the review of the Three Sisters application, the Board offered the following opinion of the meaning of "directly affected":

> "... in order to directly affect an individual or group of individuals a project would have to cause a detectable effect on it or them. Such an effect could be beneficial or injurious. For illustration only, direct effects might act upon an individual's or group of individual's bodies or health, sustenance, livelihood, property, or statutory rights. Because the Board will normally be reviewing applications for projects that have been proposed but not constructed, it will not be considering effects that have occurred but effects that might occur. The Board has considered this, and concluded that there must be evidence acceptable to a reasonable person that: 1) a chain of causality exists, 2) an effect would probably occur and 3) the effect would not be trivial, before a potential effect can be considered to have been established."

The Board went on to define a "closeness test" which depends on the demonstration of an uninterrupted chain of cause and effect between the proposed project and the individuals requesting costs. The Board concluded that: "... in the case of individuals living within the vicinity of a proposed project, the demonstration of a chain of causality that could lead to direct effects on them would normally be easy to accomplish." In the case of the Kan-Alta application, members of those organizations requesting costs are not resident in the vicinity of the proposed project, and they cannot be eligible on application of the "closeness test".

The interveners requesting eligibility claimed that they would be directly affected because their use of the public lands on which the proposed project would be built would be affected by its construction, by resulting changes to the landscape, vegetation, and fish and wildlife habitat, and by restriction of access to the lands. This is a question that did not arise in the case of the Three Sisters application where the proposed development would, if approved, occur on private land.

In the Board's opinion, the interveners did provide evidence of a chain of causality and a significant probability that there would be an effect on their use of public land. All three interveners established the identity of individuals who make recreational use of the area proposed for the development of the golf course and that their recreation could be affected to some extent. The question remaining is whether or not the probable effect that might occur would be trivial.

The Board has identified two criteria for use in determining whether or not an effect on an individual's use of public lands should be considered trivial. One concerns the distinctiveness of the use of the lands and the other the extent to which the opportunity for use that the lands provide is particularly unusual. All Albertans have access to unoccupied public lands for recreation. Where a proposed project would restrict access to public lands, recreational opportunities available to all Albertans might be affected. The Board does not believe that the legislators intended to extend eligibility for costs to the general population where its members might be subject to effects of this kind. If the legislators had intended to do so, they might have simply used the word "affected" in section 10(1) of the Act instead of the more restrictive "directly affected". Therefore one requirement for the eligibility of an individual claiming that his or her use of public lands would be affected should be that the individual, or group of individuals, must demonstrate that its use of the land differs distinctly from that of the general public.

An individual might demonstrate a use that differs from that of the general public in kind or in degree. As an example of difference in kind: an individual whose livelihood depends in part on the gathering of fungi from a particular area of public lands might be affected in a way that the general population would not. As an example of difference in degree: a licensed outfitter might be able to demonstrate that he or she would be subject to a greater effect than a casual camper or hunter. Similarly, a resident of an area might make much greater use of an area than would the general population because of its proximity. Clearly there is a point at which the distinctiveness of the use of the land by a particular individual or group of individuals becomes sufficiently distinct from use by the general population that the potential effect on that individual or group of individuals would not be trivial.

Another situation in which the potential effect on interveners may not be trivial could arise when a project would affect public lands which have a highly unusual and important feature which would not be readily available to users elsewhere in the province. A hypothetical example might be an exposure of geological strata bearing unusual fossils.

Turning to the requests for eligibility before the Board, all three interveners provided information useful in applying the criterion of distinctive use. The Sarcee F&G Association identified three members who use the area at issue for recreation more frequently than does the general population. Mr. Everett said he spends five to six days per year hunting in the immediate development area and an additional amount of time skiing and bicycling there. Although the nature of its use of the area does not differ from recreational activities of Albertans in general, the Sarcee F&G Association argued its use is much more frequent than the average Albertan. The other two interveners established use of the area by individual members, but did not argue that their intensity of use was exceptional. Although their uses of the area are of specific types, i.e., primarily fishing and naturalists' field excursions respectively, they did not contend that these are different from recreational pursuits of the public at large. The Board did not find evidence to conclude that the activities of the interveners in the area are sufficiently distinct in type or frequency of use from those of Albertans in general to qualify them as eligible for intervener costs.

With respect to highly unusual features of the area, the Sarcee F&G Association identified the ease of access to opportunities to view and hunt wildlife. Trout Unlimited said that the sport fishery for trout in the upstream reaches of Evan Thomas Creek is one of a limited number in Alberta. The Federation said that the area is one of a few affording opportunities for naturalists who are not able to walk longer distances over difficult ground.

Although the Board accepts that the area offers attractive recreational opportunities and ease of access it does not believe that the opportunities or the access to them are unique or extremely unusual in Alberta. In addition the golf course, if approved, would occupy a relatively small area and similar opportunities for recreation would probably remain available within the vicinity of the proposed development. Furthermore, the Board notes that access to the fishery in the upper reaches of Evan Thomas Creek would not be restricted by the proposed development and the existing trails for bicycling and horseback riding would be retained. The

Board, therefore, concludes that none of the interveners demonstrated that the area has features that are sufficiently unusual that restriction of access to them, or their alteration or removal, would cause an effect on the interveners that would not be trivial.

Having examined the evidence and argument provided by the interveners, the Board is not satisfied that any of them are or may be directly affected by the proposed project as intended in section 10(1) of the NRCB Act. The Board does note that final determinations with respect to eligibility and costs would normally be made on request after the completion of a hearing.

The Board wishes to emphasize that its decision reported here deals only with eligibility for awards of costs to interveners. This is distinct from the consideration of the merits of the application or the matter of standing. The Board believes that anyone with an interest in a proposed project is entitled to intervene at a hearing on an application before it. However, standing to appear does not automatically entitle an intervener to receive an award of costs. Also, in assessing the requests for awards of costs, the Board has not assessed the question of whether or not the proposed project is in the public interest.

Having concluded that none of those requesting eligibility for intervener funding are directly affected, the Board does not consider that it has jurisdiction to make an award of an advance of costs and direct that Kan-Alta pay those costs. This situation is illustrative of the circumstances the Board may face when projects come before it where the combination of a remote location and the nature of the proposed project is such that no parties are considered directly affected. Potential interveners would not be eligible for funding from the applicant and this could limit the detailed technical analyses they place before the Board. This would put additional onus on the Board and its staff to ensure an appropriately detailed review of the proposal. In such circumstances, the Board would be prepared to provide some of its own funds to interveners to help ensure that such a review occurred.

For this reason, and notwithstanding that the Board has concluded that none of those making requests are directly affected, it has carefully reviewed the intended use of funds by the two parties that requested an advance, Trout Unlimited and the Sarcee F&G Association.

Trout Unlimited indicated that it has additional data respecting fish in the area. Also, certain work is now being done for it regarding possible effects of golf courses on water and fisheries. The Board believes such information should be considered in its assessment of the Kan-Alta application, and is prepared to provide some funding to assist in that regard. The funding would be less than requested by Trout Unlimited and, for example, would not include the cost of legal representation at the hearing.

The Sarcee F&G Association proposed a study of the economic rationale for the project, describing it as an assessment of the socio-economic value of the proposed site in its present state compared to the value if the proposal proceeds. The Board believes a general assessment of the nature suggested by the Sarcee F&G Association might be useful. It is prepared to assist in the funding of such a study, including its presentation at the hearing, if an appropriate expert can be located and terms of reference agreed upon.

The Board has requested its staff to immediately contact representatives of Trout Unlimited and the Sarcee F&G Association to discuss and arrange some degree of financial support for the above mentioned matters.

3. Summary of Decision

The Board has concluded that none of the interveners making requests are directly affected in accordance with section 10(1) of the NRCB Act and therefore eligible for intervener funding. The Board is prepared to provide some of its own funds to the two parties seeking advances to assist them in bringing relevant information before the Board.

Yours truly,

G.J. DeSorcy
Chairman

APPENDIX B

Summary of Board Recommendations

SUMMARY OF BOARD RECOMMENDATIONS

Throughout this Decision Report, the Board has included a number of recommendations and suggestions regarding the proposed construction of Kan-Alta's 18-hole golf course in the Evan Thomas Creek area of Kananaskis Country. Most of these recommendations are intended for Kan-Alta as the owner-operator of the golf course and Alberta Environment, Alberta Fish and Wildlife, and Alberta Culture and Multiculturalism as the regulators of the construction and operation of the golf course facility. The following is a summary of those recommendations:

Recommendations to Kan-Alta

- It is recommended that Kan-Alta consider implementation of an in-stream flow monitoring program to help it in planning and managing golf course operations.

- In order to prevent needless contamination of Evan Thomas Creek, it is recommended that Kan-Alta not use more fertilizers than are essential.

- It is recommended that Kan-Alta schedule construction around fish spawning periods to minimize fish mortality.

- It is recommended that Kan-Alta provide a buffer along Evan Thomas Creek of a minimum of 30 m, unless Fish and Wildlife approves a lesser buffer for particular situations.

- It is recommended that Kan-Alta perform further surveys with respect to rare plant species during the flowering season before areas are cleared.

- To reduce deaths of wildlife during construction, it is recommended that Kan-Alta adhere to the constraints on scheduling identified in its application.

- To avoid attracting bears, it is recommended that Kan-Alta carefully implement its proposed measures to control garbage and odours.

- It is recommended that the mitigation/enhancement plan to be developed by Kan-Alta, to the satisfaction of Fish and Wildlife, include the following elements:

    - information gathering and analysis necessary to design an appropriate mitigation/enhancement plan;

    - a program of monitoring animal use of the proposed golf course and existing and proposed enhancement areas to determine whether the methods adopted have been effective. This should be done in conjunction with Fish and Wildlife;

  - measures to conserve or improve the value of the existing ungulate enhancement area;

  - measures to enhance ungulate habitat to the east of the proposed golf course;

  - measures suggested by Kan-Alta with respect to waterfowl habitat, if considered appropriate by Fish and Wildlife; and

  - measures to avoid or mitigate impact on rare species of amphibians, reptiles, birds and mammals, should any be found to reside on site.

- It is recommended that Kan-Alta work with KCIC to ensure that any re-routing of trails will minimize the negative effects on general recreational use of the area.

- If additional staff housing is needed and constructed, and with respect to the expansion of the regional sewage facility, it is recommended that Kan-Alta work with KCIC officials to ensure that the financial arrangements are fair to all involved parties, including the general public.

- It is recommended that Kan-Alta work with the administration of the Stoney Tribe towards optimizing the possible benefits from the project to the Tribe.

- It is recommended that Kan-Alta follow direction from the Department of Culture and Multiculturalism in any assessment of historical and archaeological resources.

Recommendations to Alberta Environment

- It is recommended to Alberta Environment that an appropriate program be in place for the on-going monitoring of the possible contamination of surface water by golf course fertilizers, pesticides, herbicides and fungicides.

Recommendations to Fish and Wildlife

- It is recommended that Fish and Wildlife review the golf course layout with Kan-Alta and approve the detail of all stream crossings and buffer strip widths.

- It is recommended that Fish and Wildlife investigate, in consultation with DFO, steps that might be taken to enhance fish habitat in the area.

- It is recommended that Fish and Wildlife and KCIC review information on road kills three years after construction of the golf course and take appropriate action.

- It is recommended that Fish and Wildlife enlarge the Evan Thomas Creek recreation area to restrict hunting on and adjacent to the entire golf course property.

- It is recommended that Fish and Wildlife ensure, in approving the proposed course layout, that at least one uncleared strip running in a north-south direction between fairways be as wide as possible, recognizing other existing constraints.

APPENDIX C

Form of Approval

THE PROVINCE OF ALBERTA
NATURAL RESOURCES CONSERVATION BOARD ACT
NATURAL RESOURCES CONSERVATION BOARD

IN THE MATTER of a project of
Kan-Alta Golf Management Ltd.
for the construction of an
18-hole golf course in the Evan
Thomas Creek area of Kananaskis Country

APPROVAL NO. 2

WHEREAS the golf course proposed for the Kananaskis area by Kan-Alta Golf Management Ltd. is a reviewable project under section 4(b) of the Natural Resources Conservation Board Act; and

WHEREAS the Natural Resources Conservation Board is prepared to grant the application by Kan-Alta Golf Management Ltd. for a golf course facility in the Evan Thomas Creek area of Kananaskis Country, subject to the conditions herein contained, and the Lieutenant Governor in Council has given his authorization, hereto attached.

THEREFORE, the Natural Resources Conservation Board, pursuant to the Natural Resources Conservation Board Act, being chapter N-5.5 of the Revised Statutes of Alberta, 1980, hereby orders as follows:

1. The project of Kan-Alta Golf Management Ltd. (hereinafter called "Kan-Alta") for an 18-hole golf course facility in the Evan Thomas Creek area of Kananaskis Country, as such project is described in Application No. 9104 from Kan-Alta to the Board dated November 26, 1991, and descriptive material supporting the application marked as exhibits at the Seebe, Alberta hearing by the Board from June 2, 1992 to June 10, 1992, is approved, subject to the terms and conditions herein contained.

2. Kan-Alta shall develop a wildlife habitat mitigation and enhancement program satisfactory to the Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife.

3. Construction of facilities on the north side of Evan Thomas Creek shall not proceed until their locations have been approved by the Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife.

4. Kan-Alta shall utilize construction techniques that will reduce disturbance of the environment to the lowest practical level, and these techniques shall include:

   - elevating the top of tees and greens constructed in the Evan Thomas Creek floodplain to above the one in 100-year flood level, installation of an impermeable barrier under such structures and armouring them adequately to avoid washouts;

- sodding areas of graded soil within five metres of Evan Thomas Creek within five days of construction; and

- providing an orientation program for construction workers to ensure they understand the potential seriousness of sedimentation problems.

5. Kan-Alta shall comply with the permits and licences of the Water Resources Act, the Clean Water Act and the Agricultural Chemicals Act or any subsequent amendments thereof issued by Alberta Environment, and with all other applicable regulations and standards of the Province of Alberta.

MADE at the City of Calgary, in the Province of Alberta, this ___ day of ________, 1992.